

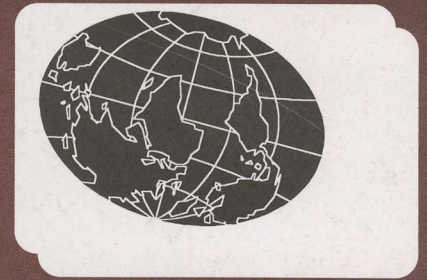
13-06-97 9.15AM

Bob Cooper's

JUNE 15 1997

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

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GONE- Load
600 Channels!**

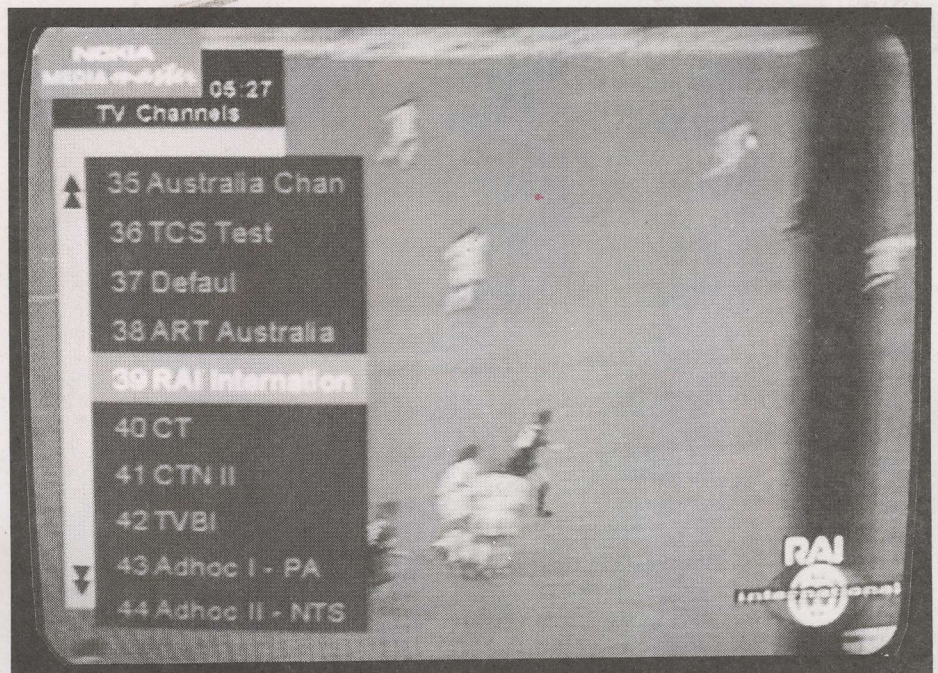
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- ✓ Cable TV Connection

Vol. 3 ♦ No. 34

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ISSN 1174-0779

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This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education.

These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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COOP'S COMMENT

One has to wonder whether people at the top of satellite industry management teams arrive at their lofty positions because of extraordinary skills, a staying power to outlast competitors for the job, or just plain dumb luck. A case in point.

TNT/Caroons is distributed on PAS-2 to cable and SMATV clients in NTSC B-MAC. To save money, Turner/Warner leases only one half of a transponder (3930 vertical). The only receiver available for this particular mode of encryption is the Scientific Atlanta 9708.

When a programmer elects to use only half of a transponder, the satellite operator is forced to reduce the power available to that half-transponder signal by a minimum of 3dB. This means that if you would have 31 dBw of signal with a full transponder signal, by dividing it in half you will have something less than 28 dBw. If the satellite operator elects to place two analogue TV signals in the same transponder and each has half of the transponder bandwidth, where one signal would have been 31 dBw in our example, now each will be something under 28 dBw.

TNT/Caroons launched in mid-1995 using a full vertical transponder (4165). As a cable operator I arranged an affiliation agreement, selected a dish based upon this and other PAS-2 services, and began carrying the signal and paying my bills to Turner. By December 1995 they had been moved by PanAmSat to their present transponder, but remained full transponder. In June of 1996 PanAmSat reduced them to half transponder.

A half-transponder signal on PAS-2 will be approximately 18 MHz in bandwidth. CNNI, another of my cable services, is also half transponder on PAS-2 and I use a Drake ESR 1255 in a reduced bandwidth (22 MHz) to compensate for the less than full use of the transponder by CNNI. If your input signal is strong enough, a receiver with a 28 MHz (or even wider) bandwidth hardly notices the extra noise you pick up when the signal is narrower than the receiver IF bandwidth. But when the signal drops to threshold or close to it, having a receiver with a 28 MHz bandwidth and a signal with a 18 MHz bandwidth is an open invitation for sparklies and other crud degrading the reception. The SA 9708 has a 28 MHz bandwidth. And after TNT went to half transponder and PanAmSat backed down the power level of this service I was at threshold. Of all of the PAS-2 signals I receive and carry on my cable system, only TNT gives me problems. For every other service I have several dB of "headroom," even the weaker digital MCPC carriers.

I went to SA and asked them how we could retrofit the 9708 (at my expense, of course!) to function with a narrower bandwidth. The first response was classic: "The 9708 utilises an automatically variable bandwidth input filter system which tracks the downlink symbol rate and sets the IF bandwidth for optimum performance. The unit does not therefore have a fixed IF bandwidth, but one which is automatically varied dependent on the characteristics of the received signal. Modification of the circuit is not a practical option." I had asked whether a narrower IF filter could be substituted; if not, was there a clever way to use a reduced bandwidth receiver outboard and then take the demodulated video back into the 9708 for B-MAC processing.

Now I instantly knew the person writing this letter and I were tuned to different bands. The 9708 has a fixed bandwidth; only digital receivers have "automatic tracking bandwidth." His use of the phrase "downlink symbol rate" told me he had made a mistake. I went back again and pointed this out. He apologised and then advised, "Communications with our manufacturing facility have indicated that it is unfortunately not possible to modify the receiver."

OK - so Turner is using a transmission format (1/2 transponder) for which there is no receiver. And we have to put up with the crud that results. Two serious top level mistakes - at Turner, and at SA. Does anyone have a suggestion? (No, replacing the dish - a 4.5m - is not viable!)



June 15, 1997

In Volume 3 ♦ Number 34

METEOR STORM PREDICTED - batten down the satellites! -p. 6

ITALIANS ARE SOCCER MAD. Period! (Pietro Casoar) -p. 10

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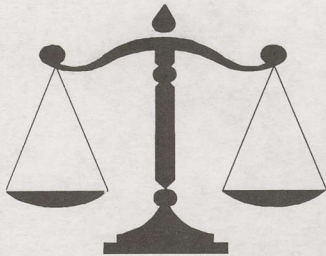
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-ON THE COVER-

A sharp eyed reader will have noticed that RAI with soccer is on the Nokia Mediamaster 9500 S screen. Digitalsat's Pietro Casoar laments the RAI decision to eliminate live soccer coverage from the EBB feed on AsiaSat 2 (page 10) and asks for support in urging the Italians to change their policy. So how does the Nokia find soccer that is not there? A close inspection of the 78 programme channel menu memorised by the Nokia tells you the answer; p. 10.



LETTERS

BOOK Burning In Iran?

"I found that SPACE Pacific offers a correspondence course on satellite TV technology. The course name, 'SPACE Pacific Satellite TV Technology Course,' indirectly tells anyone who inspects the product what is inside. That is my problem. Importing of any satellite TV equipment to Iran is not allowed. And this includes educational materials and videotapes. Please tell me how if I register for the course the materials can be shipped to me without being confiscated?"

H.S., Tehran, Iran

Whew - and I think I have problems! Let's see - we could change the cover to claim it is a cooking course, doctor the videotape to pretend the dish is used as a giant wok, and include booklets on Chinese vegetables in the package. Just in case that doesn't get by the authorities, we'd put Rupert Murdoch's name and address on the return-to-sender label!

ALAS- Not in PRC

"I am receiving Taiwan's SPACE TV on my Nokia 9500S, my SK888 and my HSS-100C. I cannot watch this transmission on any of these! Can anyone help me with this?"

Luo Shi Gang, PO Box 01-390, Luo Hu, Shenzhen P.R.C. 518001 (e-mail szluosg@public.szptt)

Not much is known about this transmission at this time and the Taiwanese firm is not overly anxious to supply information. The MPEG tuning parameters are listed here on p. 29; a Panaset 630 receives the presently FTA transmissions.

SHARED Costs?

"SPACE TV Systems wants US\$100,000 to 'authorise' a distributor to sell their multi-language (including Mandarin) Ku band system against a 1,000 IRD sell through over 2 years. I doubt anyone today in the DTH business is large enough to put up that kind of money in front (although it will be returned after you sell 1,000 units). It occurs to us as a SPACE Member that we might be able to pool with others to meet their requirements and invite communication from anyone interested."

John Kimbell, Nationwide Antenna Systems
tel 61-7-3252-2947

SPACE's deal is a bit rich; they will sell distributors the IRD for US\$450 and they suggest US\$1,000 (+ tax) for a 1.2m Ku system, installed. Of course what you sell it for is your business, not their's. A 1,000 unit guarantee may not be out of line for a consortium of dealers who cover all of eastern Australia.

LOCATION, Location, location

"Living behind a hill, my 3.7m Orbitron only goes down to C2. I am Swiss living away from home, keen to tune-in the European Bouquet on As2. To correct this I placed a 2.6m Paracclipse on top of a 10m mast with an
(continued, page 4)

PROGRAMMER PROGRAMMING PROMOTION

UPDATE

JUNE 15, 1997

Too late to correct: Project Amiorangi downlink during test phase May 17-25 was actually on 11.514. Our May citation of 11.462 was correct as we went to press but changed.

Dangerous when loading. SF#32 (p. 2) warned about hanging out on AFRTS PowerVu feed (177E) if you happen to catch it when your installer menu tells you "Boot Loader - Waiting for Information." Observer Francis Kosmalski in SF#33 reported how he nearly lost control of his D9223 by hanging out during the boot loader sequence. Now we have a unit from another NZ user which was "zapped" by the boot loader sequence and had to go back to Sydney to be unlocked. If you venture to AFRTS out of curiosity and are scrolling through the virtual channels and see "Boot Loader..." come up, quickly check what the front panel LCD display says. If it is "D.L." this means a down loading sequence is underway and your receiver is already under the control of the network operator. Do not - DO NOT touch the receiver as long as the LCD says "D.L. (anything)." When the loading is over, then you should safely be able to move on; sort of like relaxing when someone points a gun at you and then collapsing after the gun totter has left. If you try to leave the virtual channel after the down loading has begun and your receiver is under network operator control - that's when the damage is done.

WorldNet, USA effort to distribute educational and soft entertainment materials around the globe, began test transmissions on AsiaSat 2 (1270Hz) May 15th; regular programming service May 19th (0000UTC).

Free to air, analogue service parallels same feed on I511 (180E) which as we all know has become increasingly more difficult to utilise because of the inclination of this satellite. WorldNet is available for cable and SMATV, will undoubtedly have a sizeable audience in newly reached areas of the Pacific and Asia from As2. Note: The multiplicity of audio subcarriers on this service largely feed Voice

of America overseas relays in countries such as Sri Lanka (7.02, 7.20, 7.38, 7.56, 7.74, 7.92 with programme audio at 6.60; all are 15 kHz bandwidth).

Test transmissions from ex-Rimsat 41 at 161E (now Agila 1) May 14-22 were on behalf of NZ firm Impact TV and partner South Pacific Television. Using ex-Rimsat Subic Bay uplink, Impact and Filipino firm Domsat Holdings wanted to verify that after moving from 130E, this powerhouse (75 watts, global on 3675 MHz) service was still capable of operating properly (previously used by RAJ-TV). Tests were colour bars and a few hours of perhaps (perhaps not) legally retransmitted video, taken off of Palapa C1. What next? Possible use of this transponder for two services in 1/2 transponder format.

TV Shopping Network changed audio subcarrier assignments on As2 June 3rd; 6.65 is J17 equalised English, 7.2 is J17 Bahasa, 5.58 is Panda 1 Mandarin while 5.76 is Panda 1 Japanese.

SPACE TV Systems channel line-up (177E, Ku) to eastern Australia: (1) Taiwan TV, (2) China TV, (3) Formosa TV, (4) NHK Asia with Chinese subtitles, (5) Formosa News Channel, (6) KBS Korean, (7) Chinese TV System, and (8) Asia Television (Cantonese). IRDs are being sold through authorised distributors in 50 lot shipments and dealer/distributor does not participate in programming revenue stream (US\$20).

ASIASAT-2

Programming Begins at 0000 UTC
May 19, 1997

For schedule information:

gopher://gopher.voe.gov/11/worldnet-skad

For further information:

WORLDNET@USIA.GOV

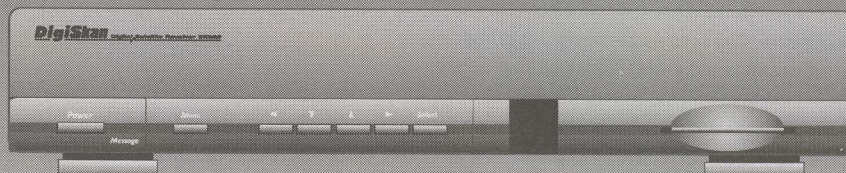
New Release

Skandia is proud to announce the release of the all new DIGISKAN SK888 family of SMS/ADB Digital Satellite Receivers, which has been designed for low cost consumer receiver applications compatible with several digital satellite receiver broadcast systems worldwide. The receiver utilises the MPEG-2 audio/video compression scheme and is primarily DVB compatible.

DigiSkat

Digital Satellite Receiver SK888

The Flexi One



also receives
10 World Radio Stations

The Receiver is designed for the European Bouquet which includes programmes from - Deutsche Welle (German) - RAI International (Italian) - MCM Music (French) - TV5 (French) - TVE (Spanish)

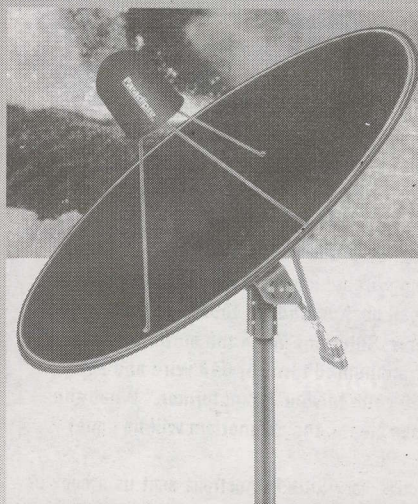
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SK888 for receiving. It works great from around 7AM to 5.30PM and then begins to sputter and fail. The signal level does not change; my analogue reception on As2 does not change. Only the EBB drops out! My first thought was someone is turning some nasty noise generator on around 5.30pm nightly but I doubt this as the signal gradually (not suddenly) disappears between 5.30 and 7pm and returns just as gradually between 7 and 7.30AM. Is the temperature affecting something? After spending countless hours and thousands of dollars on this system, I am at a loss!"

Reinhold Zuerrer, Port Vila, Vanuatu
tel/fax ++ 678-27012

Our first suggestion is an LNB or connector/cable problem. Change the LNB and be VERY careful to cross-pole null the opposite polarity. There is a fat RTPi cross-pole to EBB and it could be causing a high error rate. And redo all connectors (sealing against moisture) in the process. An LNB that gets hot in the daytime will suck moisture (through connectors or case) when it cools off. If you are still not repaired, inspect how you power the SK888. It needs to be away from (not stacked under, below, adjacent to) ALL other electronics. Finally, your problem could be adjacent satellite interference from a data channel on S21 at 103E.

Skew the dish slightly to the west of best As2 signal to drop S21 into a better null.

DEMAGNETISE A Building?

"We have been asked to demagnetise a building in Hong Kong with 864 flats plus an office podium. The builder must have used magnetised reinforcing rods or magnetised iron binding wire to hold the bars in position before the concrete was poured. I think I know how to kill the magnetism but being able to read the magnetic field level would be a great help. This magnetism is playing hell with televisions and computers!"

David Weaver, Satellite Television Rentals Ltd
Hong Kong tel ++ 852-2699-0564

Not your everyday challenge. Magnetism (alignment of electrical fields around a solid conductor such as the iron pieces noted) is an unnatural state for man-made iron. A magnetometer is a device to read the level of magnetism that exists. It is unlikely that continuity (a complete electrical circuit) exists between all of the iron rebar rods plus the iron binding wire which simply means the problem could well be hundreds or thousands of separate problems. Solution? Wrap the entire building in several hundred turns of #18 wire and apply 10,000 volts to your "transformer." When the smoke clears, the magnetism will be gone!

Parle vous PowerVu?

"Our subsidiary SAGEM Australia sent us a copy of page 11 of SatFACTS for May. I read with great interest about PowerVu because we discovered, quite by chance, that one of our digital units can receive Asia Business News on PAS-2. I am looking for information about this PowerVu; is it a scrambling system? We have never heard of it."

Mrs Salima ALAQUI, International Sales Department
SAGEM SA, Paris France

Apparently SA does not speak French. That's OK - some of us believe they don't speak English either. Quite amazing SAGEM has to learn about the problem PowerVu from us!

HARDWARE EQUIPMENT PARTS

JcSat-4, testing at 141E in April, has been moved to 150E where it is filling in for ailing JcSat-1. Only Ku-band service is operating, source says C-band will not be fired up from here "for any commercial purpose" (this does not rule out our occasional testing). Further plan is to launch JcSat-5 in November, test it (possibly again at 141) then move it to 150E where it will become permanent replacement for JcSat-1. By "next spring" (March-April), they plan to move JcSat-4 to its original planned 124E location where it should have the C and Ku footprints shown. JcSat-5 has been designed for "Asia coverage only" so don't expect anything useful south of the equator from this location on either band.

Satellites at risk. The world's insurance industry presently has a "pool" of US\$900 million available to insure satellites against risk. A common satellite costs around US\$100m to build, another \$40m to launch. Bottom line? Not enough insurance to handle the present level of satellites being launched. Extra worry: Leonids Meteor Shower due in November (p. 6 here).

PAS-2 12.529(5) Ku MPEG service may lock on PowerVu but it is not real video. And not PowerVu! "Telstra Perth" comes up on ID menu, then "GWN." No, this is not Golden West out of Perth - is US based business data service that includes minor amount of video, mostly high speed data to servers and routers. Several hundred customers are awaiting installations in Sydney area alone.

Pause control? On Hyundai HSS-100C, pushing it relocks lip sync on NTSC. Now there is perfect NTSC plus PAL reception, SCPC, MCPC, and PowerVu. The beat goes on (p. 12).

AUSTAR 17 channel national beam service Optus B3 (12.550Hz, Msym 20.000, FEC 7/8) requires 2.4m dish in Australian NT, costs A\$39.95 p/m with World Movies optional extra at \$6.95. Viewers previously using Palapa B-MAC services are being urged to switch to Austar; perhaps not a good idea (p. 22).

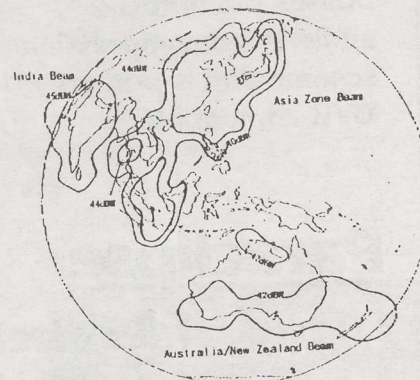
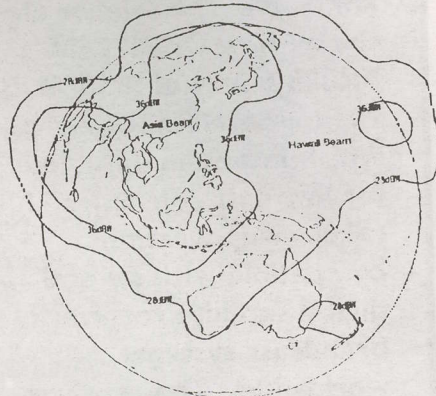
GMA's C2 service disappeared for nearly 3 days late in May; typhoon damage.

PACE DVR200P, FTA MPEG-2 receiver designed for Asia and Pacific offered at A\$704 by Skandia. Literature prepared by PACE details reception capabilities of EBB but without explanation does not list RAI Italy.

Change? Yes. Store? No. That is present bottom line with Nokia 9500 et al IRDs. You can change parameters for watching a single channel while watching to eliminate undesired artefacts; but, you cannot store these changes. Enthusiasts may not mind reprogramming a complicated menu, consumers will mind (p. 12).

UPDATE

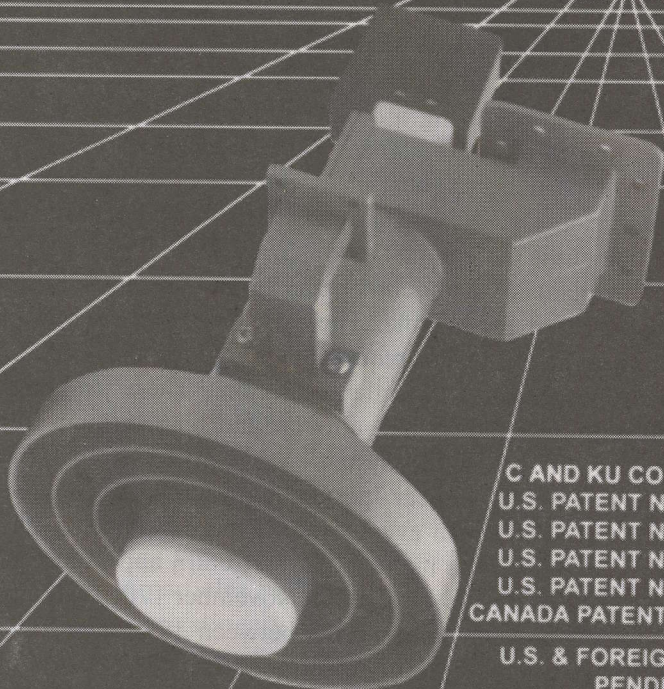
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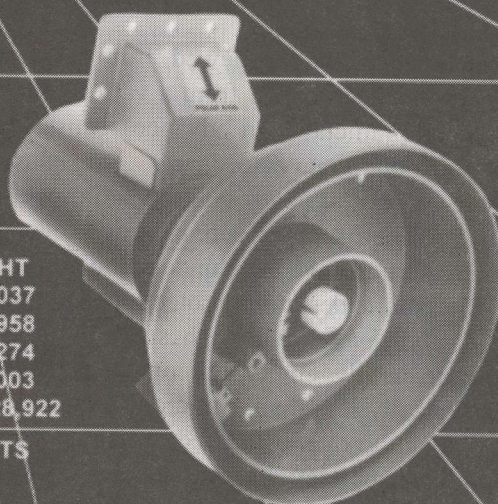
Predicted JcSat-4 from 128E
(C-band top, Ku-band below)
Courtesy David Leach, NSW



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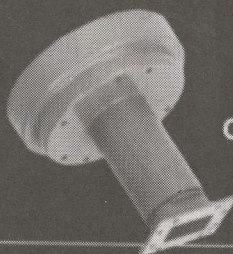
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METEOR STORM PREDICTED- SIGNIFICANT SATELLITE DAMAGE POSSIBLE

Geostationary satellites, 22,300 miles/36,000km above the equator, are at best vulnerable to damage. There are three common threats to the mechanical and electrical safety of a geo satellite:

1) *Being bumped* or run down by man made hardware. Other satellites drifting out of controlled orbit, third (or fourth) stage rocket motor parts, "shrapnel" from earlier space disasters are all potential bullets capable of crippling an otherwise normal satellite minding its own business.

2) *Particle eruptions* spewed forth by our sun. Earthlings are well protected from a variety of periodic (and largely unpredictable in advance) emissions from the sun by our magnetosphere, ionosphere and stratosphere. A geostationary satellite riding well above most of this protective cover is bombarded several times each year by particles we little understand and therefore have a difficult time designing protection against.

3) *Space particles*. Although space is primarily a vacuum, it is hardly empty of content. Space "dust" (particles typically less than 1 micron in diameter) and earth collide at a rate estimated to be in excess of 50,000,000 times per day. Larger particles, typically less than 1 mm in diameter, numbering in excess of 10,000 per 24 hours are approaching a physical size that can penetrate satellite hardware even at modest travelling speed.

Man originated space debris has yet to be identified as the cause of any satellite injury or loss - that day will surely come as the amount of debris in orbit grows. Micrometeorites (up to 1mm in diameter) are believed to have caused some damage but as we are unable to retrieve a disabled geostationary satellite for post-mortem inspection, scientists can not be certain of that. Larger space particles (meteorites) - to several metres in diameter - are certainly large enough to smash a geostationary satellite to smithereens. The good news is that as the meteorite size goes up, they become less and less common so the odds of a direct hit improves dramatically.

Space "dust" is more or less evenly distributed throughout the solar system, probably the universe as well. Remember that while our earth revolves around the sun (and on a shorter period our moon revolves around earth), the entire solar system is moving relative to all other universes and constellations. If you could look back on earth and our minor class solar system from a

point far (far!) away, our relative location would change over time. This simply means that the small segment of deep space through which we are now travelling may not have the same "vacuum characteristics" as a portion we will travel through in 100 or 1,000 years.

We are the third planet from our sun; there are six others also revolving around our "small" class star. In addition to the nine planets, there are several rings of debris (particles of rock, many the size of a large car or truck, some the size of a modest island such as Guam) which circle our sun just as we do.

The planetary and debris paths around the sun are near circular and predictable. There is another class of sun circling debris which requires tens or even hundreds of years to complete a single revolution. These pathways are elliptical rather than circular and pass through our region of the solar system very infrequently. The Leonids with a 33 year "period" between passings close to earth is one such event. Here is the bottom line: The Leonids will make its next 33-year-return appearance in the close proximity of earth on November 17th - actually one or more November 17ths between 1997 and 2003. And when it arrives, the meteorite count for a period of approximately 4 hours is predicted to rise to more than 150,000 per hour. Per hour! We'll return to what this means.

Particle Damage

Although an average of 10,000 particles large enough to damage a satellite if striking it are encountered by earth each day, a 10 square metre surface area satellite has less than 1 chance in 100,000 of being struck during a ten year lifetime. Those are pretty safe odds. And when the number of meteorite particles rips from 10,000 per day to 150,000 per hour during a meteorite storm such as the Leonids, the odds are still quite good (1 chance in 1,428) that a particular satellite will be struck in any given hour of high meteorite activity.

We can visualise the damage resulting from a piece of rock striking a satellite; but perhaps not if the piece of rock and satellite collide at a combined forward speed in the range of 255,600 kilometres per hour (!). Most of a satellite surface area is represented by the solar panels (up to 80 square metres) and the uplink receive / downlink transmit antenna arrays (up to 20 square metres). The actual satellite seldom exceeds 10 square metres. Solar panels and antenna arrays are thin and have relatively low mass. A projectile travelling at 255,600 km per hour will rip through without even

OVERVIEW of the LEONIDS

Last Seven Serious Leonid Encounters

1799 Nov. 12-	0712-1200UTC	10,000 p/h(*)
1832 Nov. 12-	2136-0713UTC	20,000 p/h
1833 Nov. 13-	0712-1200UTC	50,000 p/h
1866 Nov. 14-	0000-0048UTC	10,000 p/h
1867 Nov. 15-	0712-1200UTC	1,500 p/h
1965 Nov. 17-	0224-1912UTC	5,00p/h
1966 Nov. 17-	0936-1424UTC	150,000p/h

Predicted Peak Times for Next Return

1997	Nov. 17-1100UTC (+/- 3 hours)
1998	Nov. 17-1702UTC (+/- 3.5 hours)
1999	Nov. 17-2302UTC (+/- 4 hours)
2000	Nov. 17-0517UTC (+/- 3.5 hours)
2001	Nov. 17-1117UTC (+/- 3 hours)
2002	Nov. 17-1731UTC (+/- 2.5 hours)
2003	Nov. 17-2359UTC (+/- 2 hours)

*/ Number of meteorite "burn trails" to be seen by an observer on earth from one location (!) in a period of one hour

slowing down. The body of the satellite is another matter; very dense matter at that.

Kinetic energy. A micrometeorite weighing 1/100th of a gram (visualise how small that really is), travelling at 255,600 km per hour, has the impact power of a stick of dynamite. This impact power (kinetic energy) is deadly. A mere speck of a particle, so small as to only leave a microscopic pit in the outer surface, packs such tremendous "raw" energy that microseconds after being struck the satellite explodes; just as if a stick of dynamite had been set off inside of the bird.

If kinetic energy was not a significant enough worry, there is an even deadlier force packed inside of the tiny micro or larger meteorite: *Plasma clouds*.

Superfast particles colliding with a semisolid object such as a geostationary satellite create an immediate child of the collision. Scientists call this a plasma cloud. This plasma cloud is only now being slightly understood (it is difficult to simulate properly on earth). Researchers say it is a field of raw *electrical* energy (while kinetic energy is raw *explosive* power) and the plasma cloud forms and spreads throughout the body of the struck object at something approaching the speed of light. So here is the sequence:

1) The satellite is struck by a superfast moving particle.

2) A microscopic scar, barely a paint chip in size, appears on the skin of the object. If the object is thin (such as the solar panel or a dish antenna array) the particle exits with virtually no reduction in forward speed. If the object is thicker at the point of impact (the satellite body proper), the particle will possibly still be "passing through" as ...

3) A plasma cloud forms and moving at the speed of light (305,000 km per hour - even faster than the particle) the electrical energy from the cloud will overwash and consume every electrical circuit in the satellite (akin to a lightning strike on earth hitting an elevated aerial).

4) Meanwhile, a microsecond later, the kinetic energy from the particle creates the equivalent of an explosion with the power of a stick of dynamite (or more - a function of the particle size and speed).

In very slow motion, if you were standing off to the side and witnessing this death of a satellite, you would see the pit form on the surface, then witness a gigantic fireworks display as the plasma cloud short circuited the satellite's electrical and electronics subassemblies, followed by the implosion and then explosion of the satellite itself sending shrapnel pieces in all directions.

The Leonids meteor shower, which returns on November 12-17th every 33 years (+/- 3 years) will in a four hour period have a 1 in 357 chance of striking a particular geostationary satellite if the actual micrometeorite and meteorite rate of the Leonids reaches the 1966 estimate of 150,000 particles per hour. The increase in particles being caught up by the earth cannot be accurately forecast since previous Leonid events (1965/66 and prior) all occurred before we arrived at our present state of technology which will - now for the first time - allow scientists to determine with +/- 10% precision the real particle bombardment rate.

Forecasts of the strike odds of the Leonids in its next close encounter with earth are fraught with uncertainties. As the table above shows, although the orbital path of earth and the elliptical path of the Leonids come in close proximity to one another every 33 years, there is no certainty the two will collide or near-collide within any specific 33 year return point. The Leonids are probably the remains of the Temple-Tuttle comet. Comets measured to date range up to 10 miles in diameter; at the core is frozen water and rock particles. As a comet moves closer to the sun, heating creates sublimation (surface water heats, producing the space equivalent of steam) and thus the comet tail (material released from the comet's surface). Temple-Tuttle remnants orbit the sun in a plane almost identical to that of earth (inclined 13 degrees) but in the opposite orbital direction. This accounts for the tremendous speed at which Leonids particles strike the region of the earth - a locomotive running headlong into a motorcycle with both at full throttle.

The particle stream is compact and unusually dense - as narrow as 22,000 miles across. You can calculate the length (as opposed to the width) by recognising the

MEANWHILE - What About Particle Eruptions from the Sun?

A direct strike by a meteorite (particle) is a serious concern but hardly the only one. Eruptions from the sun are in fact the larger worry. Our sun spews forth a wide range of emissions of which visible light is a by product. Some of these emissions would kill you dead were it not for the shielding effect of the stratosphere and atmosphere. The ozone hole is a minor class of this sort of threat. Our sun has an eleven or twenty-two year "cycle" of solar disturbances (called sun spots in the trade). Sun spots are visible, dark coloured blemishes that form from eruptions below the surface. Once on the surface, a sun spot may last from a few days to six months. Sun spots are "vents" which drain off powerful geomagnetic disturbances occurring within the sun's subsurface area. Additionally, a sort of reverse sun spot called a "coronal hole" can also form and "vent" our sun's gaseous build up. Think of the sun as a giant stomach and sun spots and coronal holes with belching or farting. Like the human variety, these (geomagnetic) disturbances are sometimes very violent. When the sun burps, several classes of energy and matter spew forth. When this energy reaches the vicinity of earth, a number of nasty things happen. The Aurora (bands of light colouring the night sky centred over the south magnetic pole) is one visible side effect of this energy reaching earth.

In mid-1978 an early US naval satellite (Seasat 1) suddenly ceased to work. Commercial/military geostationary satellites were but 5 years old at the time; without warning, the satellite suddenly "dumped" the contents of its batteries and went dead. No warning, no telemetry inkling of what went wrong.

Simultaneously, two early RCA satellites (F1, F2) went berserk shedding transponders (they quit) and registering telemetry data that made no sense. RCA got one back into proper operation, the other limped along, wounded, for several additional years. The culprit was uncovered a decade later.

By January 1994, when Anik E2 suddenly went out of control scientists had deduced a relationship between mysterious forces at work to grapple control of geosats away from their nominal earth bound controllers.

Eruptions on the sun followed by unusually high levels of radiation (up to 5 days later by slower moving radiation streams) was the declared cause. Solar storms emit bands of radiation, some arrive within minutes (travelling at the speed of light), others (often more deadly) days after the solar eruption. One scientist likens the geostationary satellite to you or I standing on a street corner when a hydrogen bomb goes off miles away. We are first subjected to a brilliant, blinding flash, then a slower moving debris storm as the force of the explosion sends shock waves over us, finally by the radiation laden particles minutes later. A solar storm is the closest thing we have in our solar system to a hydrogen bomb explosion - only this explosion is mega-times as powerful as a manmade bomb.

Satellites are routinely 'hardened' against damage. But hardening means layer upon layer of shielding and this added weight significantly reduces the space and weight allowance for the working payload (i.e., the satellite). So hardening is relative. And it has only been in the last few years that scientific research satellites plying the void of space have determined with an exactness the true characteristics of the solar storm threat. In the interim, Anik E1, Intelsat K and in January of this year Telstar all suffered damage (Telstar was totally destroyed) coincidental with the arrival in our "air space" of a solar eruption "shock wave."

So quite independent of a direct strike by a meteorite, satellites remain vulnerable to electromagnetic damage following a solar eruption. Doubtless mankind's recently acquired and to be acquired knowledge concerning the levels of radiation to be expected will ultimately lead to improved satellite protection. For now, every satellite in orbit and to be launched over the coming few years will be a sitting duck.

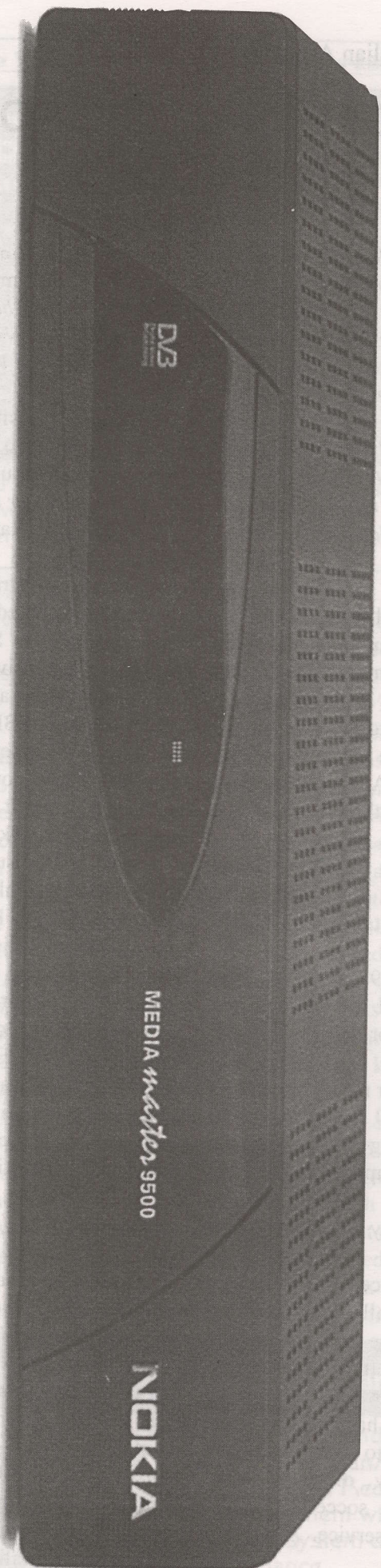
length of time the earth is likely to be inside of the influence (see table, p. 7) less the forward motion of the earth through the stream. In the case of the Leonids, all of this is fairly recent in universe time. The debris stream is believed to have been cast off from the Tempel-Tuttle comet sometime after 1666.

Unlike still cohesive comets and other objects solid enough to be picked up by radar or visually, a "swarm" of small rocks and ice is not evident until we are into it. Moreover, there is no way to accurately foretell whether earth will pass through an edge of the debris stream or the middle. The elliptical trajectory of the Leonids stream is known but not well enough measured to determine with precision just which portion of the 22,000 mile width "centre" earth will encounter. Moreover, the transit time of the elliptical orbit is

significantly affected by the closeness of the Leonids path past our sun. In recorded history the 1833 pass was the most spectacular; scientists now understand why. At that time the Leonids 33 year elliptical journey took it close to the sun where heating of the core caused the debris to separate and form a much larger particle base. Unfortunately, the 1997-2002 pass duplicates this close-to-the-sun path leading to forecasts that the usually mild Leonids will this time around be unlike anything witnessed in modern recorded time.

None of this is giving comfort to satellite operators nor their insurance carriers. Where possible, satellites will be "turned sideways" to present the lowest possible head-on profile to the debris stream, thereby reducing the odds of a particle collision. With his manoeuvre, satellite service will be lost or impaired for the duration of the storm. It all promises to be an experience of a lifetime, on earth and in the air.

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ITALIANS IN GENERAL ARE SOCCER MAD. PERIOD!

Coop's Note: Australian's of Italian descent are angry. Their much loved soccer matches are systematically deleted from the European Bouquet (EBB) feed on AsiaSat 2 while those who have access to Optus (cable; and we assume Optus satellite after 1 July) can subscribe to the RAI service complete with the Italian soccer matches. Satellite dealer Pietro Casoar (Digitalsat Communications, 4 Malcolm St., Oak Park, Melbourne, Vic. 3046; ++61-3-9306-4167) reviews the situation as it exists early in June. Of note, as reported in SF April 15th, the 1995 Australian census found 269,400 émigrés of Italian descent.

...

Growing concern about the Italian channel "RAI" has been quite evident in the last 3 months with my customers, would be customers and myself (and I am sure I am not alone). Everyone wants to know about a particular sporting content: Soccer Matches!

All soccer matches on RAI EBB are blacked out with an Italian Teletext page plus Radio RAI for the audio. I have been able to backtrack and trace the origins of this as follows:

1) The RAI International feed (on EBB) is relayed directly from the satellite Eutelsat II-F1 (so-called Hotbird 1) which is at 13E. This digital feed on 11.646 GHz is FTA.

2) Contacts at RAI are at ++39 6 3878 (RAI Switchboard, ask to speak to the RAI International rep for the Asia and Australia region), or call directly Mr Giovanni DeLuca (++39 6 3317 1505).

3) Watch closely just before a soccer match begins. As the match opens, for approximately 10 seconds you will either see the launch of the opening segment or the players on the field, and then abruptly the Teletext screen appears.

This is totally intentional and is only done when there is a soccer match.

As many observers would have noticed, at the start up date of RAI International on EBB, all soccer matches were shown. And, let's be honest, the inclusion of the soccer matches was the strongest selling point to the Italian community and I should know - I am one of them! But from the date when RAI has blocked these matches on EBB, selling a DTH dish to a member of the Italian community has been very difficult. Most Australian-Italians feel that without soccer, it is not worth the money to spend for this service. And word

that soccer is missing has spread rapidly in the Italian community - all of my early clients want to know "When will soccer come back on?" Most would have gone directly to Optus Vision which does carry the soccer matches if they had known the soccer matches would be eliminated.

What makes this situation very difficult is that the RAI people have become very tight lipped about this matter; all they will say to us when we call is, "It is a matter of international soccer telecast rights."

I think not. Rather, I believe RAI has no legal problems with the soccer match rights holders over telecasting to Australia; their real problem is with a agreement negotiated between an executive of RAI some years ago and a Saudi firm that believed it was purchasing "exclusive" RAI rights for Australia. When RAI discovered, after first telecasting the soccer matches through EBB, that people could purchase a dish and view RAI, I feel certain the Saudi contract holders complained. RAI could not get out of the contract with the Saudis, and, it could not back out of the EBB agreements. To make the Saudis less unhappy, perhaps to prevent a law suit, they negotiated a compromise: "Eliminate the popular soccer matches so that the Saudis could still sell the RAI feed (with soccer included) to Optus Vision. In this way the Saudis would get a return for their investment while RAI could 'save face' and stay a part of the AsiaSat 2 EBB bouquet."

Remember that on Eutelsat II-F1 RAI is free to air throughout all of Europe, the middle east and North Africa. Australia's approximately 17 million people and our Italians numbering under 270,000 are a mere drop in the ocean in the coverage numbers of Eutelsat. The soccer matches routinely appear on Eutelsat-F1.

RAI owns the rights world-wide to these soccer matches, of that I am convinced. SatFACTS for May 15th (p. 4) reported: "A former top exec of RAI made a side deal with a personal friend in the Arab business world and the present RAI management is reluctant to piss off the Arabs by cancelling the contract." I find it curious that RAI which is committed to displaying the best of Italian culture and society to the world through EBB and other transmission outlets is more concerned about pissing off one Arab business executive than depriving the 270,000 Italians living in Australia of their national sport and passion. I further note that in turning off the live soccer coverage to Australia via EBB, RAI is also depriving Italians and others within the other 51 Asian and Pacific countries reached by EBB of this

1020001 102 TELEVIDEO Do 23 Mag 22:12:44

DALLE 4 IN POI

4.00 Usa: accordo con industrie tabac-
co: meno sigarette per i giovani.

4.42 Polonia: referendum su nuova Co-
stituzione. No Chiesa e sindacati

5.44 Australia: da domani la conferenza
di riconciliazione con aborigeni.

6.30 Nave cisterna in fiamme al largo
delle coste sud-orientali sarde.

7.24 Corsica: attentato contro gendar-
meria, nessuna vittima.

8.22 Francia: cominciate operazioni di
voto per legislative anticipate

Ultim'ora 101 Prima Pagina



While Italian soccer is scheduled live on Eutelsat II-F1, RAI control drops in Teletext (left) married to RAI radio audio on AsiaSat 2. Meanwhile Australian Optus cable gets their RAI feed, still with soccer intact, through a separate feed on PAS-2 (on right, see p. 27, here; photos taken 1 second apart).

important part of our culture. This seems like a tremendous price to be paying all out of fear of "not pissing off an Arab businessman."

To add insult to injury, RAI also now chooses to eliminate a soccer news programme called "La Giostra Dei Gol" from the EBB package. They replace this programme, for which we see promotions during the week, with a live feed from RAI TRE called "Quelli Che ... Il Calcio..." The difference between the two shows is that on "La Giostra Del Gol" excerpts from soccer matches are shown while on "Quelli Che ...Il Calcio..." they only talk about soccer.

I recently advertised in the Australian/Italian newspaper "Il Globo" and had 20 calls. The first question was always, "Is there LIVE soccer?" A truthful answer and bang - the caller hung up. If they live where Optus Vision cable is available, their choice is obvious. A dish costs more up front, but there are no monthly fees. Optus Vision costs little (or nothing) up front, and you pay monthly for the service. Even where Optus cable is not available, it is usually "no sale" for a dish simply because of the importance attached to having "LIVE soccer." Italians are soccer mad. Period.

All of this has made me cynical that RAI International has a long (or short!) term plan to eventually encrypt the As2 EBB feed. If you check their web site (www.mix.it/rainternational) you will quickly see their

service is FTA throughout Europe, and with the exceptions noted, on As2. In North and South America it is carried encrypted and sold to DTH viewers or through cable. As much as I would like to believe the story that it is FTA as "Italy's window to the world," there is a nagging realisation that it is FTA only as a tool to get a broad viewing base, to hook people on the service, in preparation for one day announcing it will revert to a pay service. Leaving soccer out of the EBB coverage is to deprive overseas Italians (and others) of one of the most compelling aspects of the Italian culture: Soccer. Imagine going into an Italian restaurant that does not serve pizza, spaghetti or vino. Che Vergonia!

I recently viewed a soccer match between Portugal and Italy on FTA RTPi (also on As2). How ironic! This flies in the face of the statements issued by RAI International that "international rights issues" are preventing them from carrying the Italian matches on EBB.

I am calling for an investigation of how this matter has been handled, and asking other concerned parties to join me in berating RAI for this action. If RAI made a bad business deal with a Saudi firm over "Australian rights," let them be honest enough to admit this and to remember that RAI is funded for the use of Italians at home and overseas, not as a tool that lines the pockets of former executives and their Arab friends with gold.

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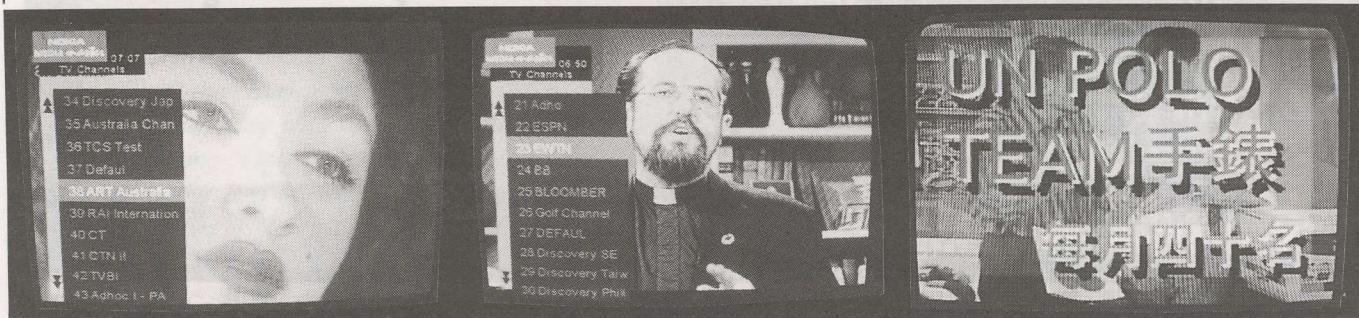
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DIGITAL HARDWARE AND PROGRAMMING UPDATE 97-5



Nokia Version 2.233: Left/ ART Australia PAS-2, middle PAS-2 EWTN; right, PAS-2 TCS Singapore

Our front cover this month says it all. There are now receivers in the marketplace into which you can load the parameters for an array of (almost) instant-recall MPEG programme sources. Without regard whether the services originate in MPEG-2 or PowerVu, NTSC or PAL. And when they are in PowerVu and NTSC? No freeze framing, no glitches. Digital Christmas has finally arrived in the Pacific and Asia.

The marketplace has been ready, and anxious, to purchase MPEG-digital receivers from the date 13 months ago that Scientific-Atlanta first incorrectly announced their D9223 as an "MPEG-2 compliant" receiver. A slow trickle of limited function MPEG format receivers followed the first SA release, none were capable of accessing more than a handful of services and most required elaborate software input changes before a viewer could switch from one service to another. We have all learned a range of new terms and much about the limitations of "DVB Compliant" technology in the interim period. We now know that receivers capable of processing MCPC (multiple channel per carrier) services such as the European Bouquet (EBB) often cannot process SCPC (single channel per carrier) format transmissions. We know that transmissions in NTSC format create difficulties for many receivers designed to work only with PAL. And we have learned that MPEG-2 variants, using proprietary software routines such as the PowerVu service from SA, are very difficult to process (if at all) on true "MPEG-2 Compliant" format receivers.

The first non-PowerVu receivers offered were quite literally smuggled out of South Africa where they were being sold for the conditional access MultiChoice service. Quite by design accident they worked, after a fashion, with a handful of services such as the NBC bouquet on PAS-2 and the early CCTV (Chinese)

services. Even the Galaxy (Pace built) DGT-400 receivers were found to be capable of NBC bouquet reception, unless of course the DGT-400 had been upgraded by Galaxy "over the air" (after which it would no longer receive the NBC services on C-band). None of the models available through the balance of 1996 offered more than EBB, NBC and CCTV reception.

Then late in December with no prior announcement the first Chinese SCPC service appeared on As2; today there are 12 of these regional Chinese (Mandarin) channels through 11 separate uplinks. Philips had supplied the uplinks and a token number of SCPC MPEG-2 receivers to kick-off the new Chinese services. Every manufacturer in the world would by January be beating a pathway to China to offer their own expertise and receivers. With as many as 1,000,000 receivers for this service forecast for 1997, suddenly the digital world was taking an interest in Asia.

There followed a number of "C" model receivers, designed for the Chinese SCPC market. Some of these receivers (Philips and others) were specifically designed for the SCPC transmission parameters making them useless for MCPC format transmissions. Others were originally designed as MCPC units quickly software modified to add SCPC. Out of all of this came a handful of models with special software which, mostly by accident, also worked after a fashion with NTSC (as well as PAL) and PowerVu (as well as standard DVB Compliant MPEG-2) services. As early as January of this year such receivers were provided for testing by manufacturers such as Hyundai and Nokia. However, until late in May no receiver could boast the ability to receive all available formats without undesired artefacts. The most common undesirable artefacts were freeze framing at approximately 20 second intervals on NTSC signals (a brief interruption in picture, sometimes sound, that lasted 0.5 seconds and then reception resumed) - the Nokia receivers, or, out of sync audio and video on

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TO CORRECT NTSC FREEZE UP on NOKIA 9500 S

Must be "version" 2+ but will not work with ALL versions.

From red screen menu -

- 1) Change reg 71 to B3
- 2) Change 61 to 05 and then go back to 07 which produces "clear PAL output with no freeze up."

TO CORRECT NTSC LIP SYNC on HYUNDAI HSS-100C

1) Take remote in hand

2) Push "pause-pause" on remote

The receiver will "blink" and relock with video and audio in sync. When you change programme channels inside the same bouquet, it may or may not have to be renewed.

NTSC signals (sound behind the video) - the Hyundai receivers. Late in May all of this sorted out; sort of.

Of the many software versions of the Nokia 9500 S now in distribution, at least one version has capacity to:

- 1) Load (they claim) up to 600 programme channels within as many as 60 bouquets;
- 2) With use of the "Red Menu" eliminate the annoying 20 second NTSC freeze up (above).

A unit received for test by SatFACTS loaded 78 programme channels from 30 bouquets before we decided to call it a day (see front cover). So here, at last, is a machine that does SCPC, MCPC, MPEG-2 and PowerVu. Is this the perfect, everyone wants one, IRD? Possibly not.

The software version on our test unit is no longer identified on the front panel LCD during power up. Previously the LCD advised you of the "v" (version) number for the software. Replacing this display, our receiver says "Nokiae3," all run together. Does "e3" tell us a software version? Unlikely. There is more, a sticker appearing on the bottom reading:

**"Boot 2.00 UnS
No. 2.233"**

A similar (perhaps identical) version of the 9500 S has also arrived in quantity at OPAC (1) in Australia; smaller quantities at AV-COMM (1). Comparing notes with Jacob Keness and Garry Cratt, it appears our test unit and those received by OPAC and AV-COMM perform identically.

Without going into the infamous "Red Screen" menu, this Nokia version loads everything in the sky (whether conditional access or not) without overwriting the channel listings; a major improvement from earlier Nokia units. On NTSC services (whether PowerVu or not) the receiver has the 20 second "NTSC glitch freeze" extensively reported previously in SatFACTS. For those unfamiliar with this artefact, the NTSC video runs fine for 20 seconds and then locks (freezes) for approximately 1/2 second. Then it unlocks and for 20 seconds the reception is perfect again; to repeat. On some (but not all) NTSC services the video lock up is accompanied by an equal period of time when the audio also stops. Nokia sources in Sweden are now promising yet another version, the 8200 S, "late in August" which will have twin menus - one for PAL format MPEG-2

and a second for PowerVu NTSC. Where that may leave non-PowerVu NTSC services (such as STAR TV on AsiaSat 2) is unclear. For now a dedicated person can enter the magic Red Screen Menu numbers shown here to clear up the NTSC glitch; provided you start from a co-operative software version (2). The bad news is the Red Screen Menu is very touchy to use and easy to screw up; this solution may be OK for an enthusiast but it is hardly consumer friendly.

Meanwhile in the Hyundai camp there is limited joy because it is possible to push a button twice (see above) and cause the audio-video lip sync problem to correct itself. This, again, relates to receiving NTSC services which have not been "perfect" because of this artefact. That's the good news. The less good news is that most Hyundai users are discovering the receiver is very slow to respond when changing bouquets and because it creates its own numbering (logging) system for bouquets, you have no on-screen identification of programmers as you scroll through the loaded transponders and bouquets. There are additional "hidden menus" within the Hyundai now being studied to see if the remaining problems can be corrected.

Should you continue to "wait" for the perfect "all singing, all dancing" receiver? If you are an enthusiast and want to be a part of the larger learning exercise now underway, there is no reason to prolong selecting from either the Hyundai or Nokia (of the proper software version). If you are handling receivers for resale, and NTSC is an important part of your customer needs, the Hyundai is the better choice (provided you understand the limitations). For cable or SMATV use, either receiver can be programmed to provide dedicated programme channel service in either PAL or NTSC (however, if power is cut to either receiver, and you were set to receive an NTSC service, someone will have to reset the receiver after the power comes back on; a hidden menu in the Hyundai claims to be able to fix this - we will see).

This note. The various suppliers handling the Hyundai and Nokia products has changed during the past 30 days; see page 28.

1/ OPAC Pty Ltd: tel + +61-2-9584-1233; AV-COMM Pty Ltd + +61-2-9949-7417

2/ To determine if your Nokia will correct the NTSC glitch as shown above:

(1) Press radio-up-radio, (2) If your front panel LCD shows a TV channel name, the procedure above should work

MANUFACTURER, DISTRIBUTOR, DEALER, CONSUMER

When a new technology appears, there is always an instant market of people who simply must have the latest, best, most exciting new products. In the retail trade such buyers are known as "early adopters."

Most manufacturers attempt to control their product introductions (called the "roll out phase") by arranging for distribution through firms with the proper credentials to support the new technology. The manufacturer must provide some form of (stated in writing) "Warranty" and equally important, an established procedure for the ultimate buyer to follow should there be a call on the warranty.

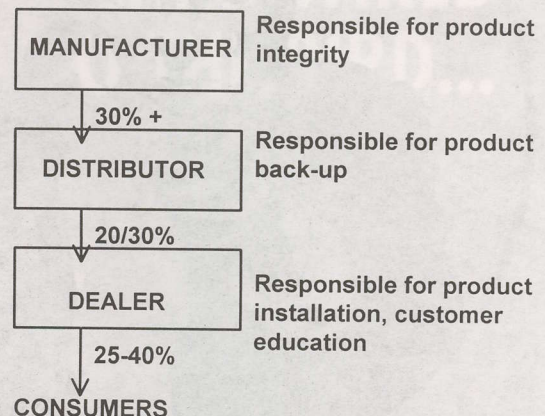
In most consumer product categories the manufacturer does not service dealers directly, rather it sells to distributors. The distributor selects dealers to handle the product, ensures the dealers are properly equipped and trained, and assumes a warehousing function. There are several cardinal rules:

- 1) Distributors do not sell directly to the public (consumer), only to authorised dealers
- 2) Distributors act as a warranty clearing house for the dealer service problems
- 3) The manufacturer does not sell to dealers, and usually as a matter of conscience establishes (sets up) distributors by (exclusive) geographic regions

Getting into this "stream" as a dealer usually involves convincing the distributor your business will move product, and not embarrass either the distributor or manufacturer.

The satellite DTH field has often eliminated the distributor level of the chain and usually with poor results. When DTH began in North America, individuals hoping to become dealers attended the thrice annual trade shows to talk directly with manufacturers. Most manufacturers created "starter packages" consisting of all of the basic parts required for three complete C-band systems. The would be dealer bought a starter pack, went home and installed one for himself and then tried to sell two others. With the proceeds from the first two, he would order three more equipment packages and if successful eventually grow to the pricing levels attendant with purchasing ten or more at one time.

An individual or business could not buy a single "complete system wholesale" (i.e., at dealer pricing) for quite some time (often six months or more after their first purchase, and then only under unusual circumstances). This policy eliminated people who would attend a trade show pretending to be a dealer only for the purpose of acquiring one system for their own



needs at wholesale pricing. Once a "dealer" had reordered sufficient times to have established himself as a mover of equipment, then the distributor might at his option allow individual parts to be purchased.

This procedure grew out of the chaos that came from the early days of DTH/TVRO. Initially, to qualify as a dealer (and to be able to buy at dealer pricing) one needed only a business card and to show up at a trade show. Starting from ground zero, there were no distributors and no dealers so manufacturers (many, themselves, very small in size) were willing to sell to anyone capable of paying for the equipment. Antennas (then, like now in the Pacific, typically 3m in size) presented a special logistics problem. They were difficult (and expensive) to ship and only made economic sense when shipped in large quantities.

Distributors became a feature of hardware distribution for two primary reasons:

- 1) To reduce the freight costs (by shipping more at one time, to take advantage of bulk container space discounts)
- 2) To reduce the "service work load" on the manufacturers.

New dealers and/or new products always creates a significant new level of hand holding guidance for a manufacturer. People who could not spell satellite one week were suddenly selling satellite systems the next week and often without any training. By placing a distributor between the dealer and the manufacturer, the majority of the service and "help me!" calls were eliminated.

More Recently - Out Here

In the Pacific and Asia, we have been unfortunate enough to fall into the satellite world at a point in time where the easy analogue systems are on their way out



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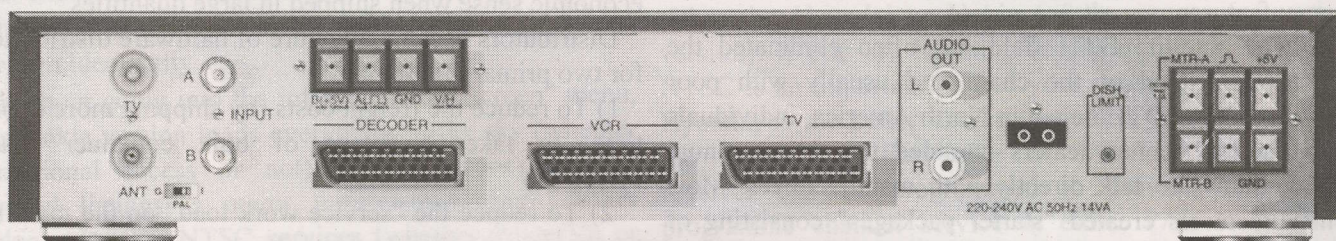
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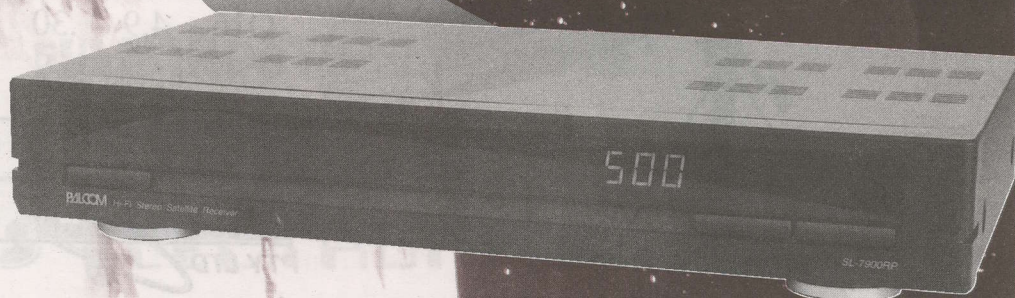
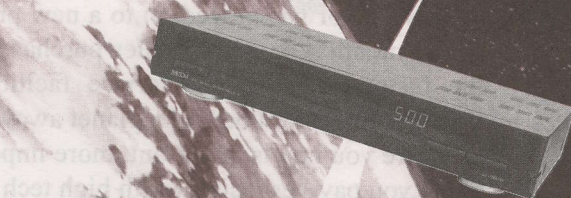
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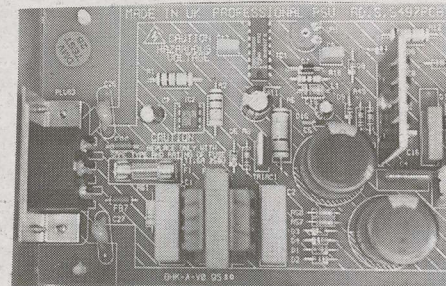
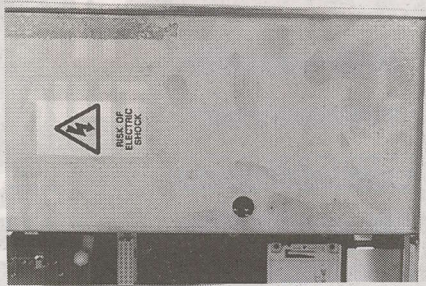
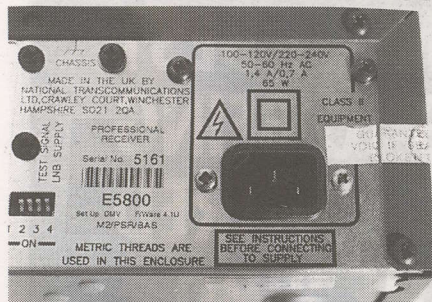
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THINGS THAT GO BUMP IN THE NIGHT - Half a world away to change a fuse!



Case history in frustration: DMV 3000 receiver (not your average "toy" device at A/NZ\$4,000 +) fuse protecting LNB line (and power supply) is inside of case. Case is sealed shut with paper tape warning "Guarantee Void if this seal is broken." To even check the fuse you must break the seal (left), then dismantle the case (16 screws), then remove metal shield that covers power supply (middle), to finally see the fuse is good (right)! In this case unit had to be air freighted back to UK (NZ\$346!) for "warranty repair" - provided of course they accept our reason for breaking the warranty seal.

and the newer digital systems are still climbing a steep learning curve. What this means is that people who have no experience in satellite are being thrust into a world dominated by megasymbol and fec rates and a system signal level threshold that goes from clean and clear pictures to no pictures over a very narrow window. Moreover, we are complicating the learning curve by being overly anxious to adopt digital receiver hardware which is at best unproved and in the worst case is not suited for the task at hand.

What this does to the dealer who only wishes a reasonable discount and backup service when he requires it is create an entirely new "risk factor." The

dealer becomes subject to the changing whims of the marketplace and the sources from which he purchases product.

A digital receiver that does not function as it is supposed to perform would normally go back to a factory authorised service centre, or a distributor who would offer a replacement unit for the defective one. If the distributor has moved on to a new product ("flavour of the month") or if the dealer purchased directly from the factory, the nearest service facility and "factory backup" could well be half a planet away.

Where you buy is important, more important than how much you pay - especially with high tech equipment.



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Antenna Specifications

	Dia	F/D	Gain dBi	
Model	M	Ratio	4.2GHz	12.2GHz
SST8	2.5	.36	39.2	46.6
C10	3.0	.30	40.5	48.2
SX12	3.6	.36	42.2	49.5
O16	4.9	.30	44.9	52.1

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Satellite
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A trade association for users, designers,
installers, sellers of private satellite-direct
systems in the Pacific Ocean & Asia Regions

Confusion In The Marketplace

The approach of the July 1st deregulation date for Australian telecommunications is much anticipated but little understood. Most of the major players are keeping their plans under wraps and it is likely to be September or even later before many of the changes are public knowledge.

The deregulation we focus upon relates to delivery via satellite or cable of programming services not originating within Australia. In fact there are far bigger dollars at stake in the telephone and data business worlds. Australians will shortly have the opportunity to subscribe to overseas telephone services that promise to halve or better their present long distance rates. New entrants in all fields of telecommunications are anxious to establish their own brand recognition on the Australian marketplace. The offers will be plentiful, the claims extravagant and the consumer will understandably be confused.

The confusion began early, over Easter Weekend (to be precise) for residents in Australia's Northern Territory. There, the "Easter Bunny" promised to deliver a 2.4m dish, feedhorn, Gardiner .7 LNB, mounting pole and cable for A\$2,390. They claimed this was a savings of \$288. You will notice this does not include a receiver. No doubt many of our members would be delighted to be paid A\$2390 to supply and install a 2.4 metre dish, pole, feed, LNB and some cable.

The IRD is being subsidised by the programme supplier; the user pays an additional \$99 to be "turned on" (have the IRD brought to the home and connected

-WHAT The Easter Bunny Promised for \$39.95- After the consumer has paid \$2,390 for a 2.4m dish and outdoor electronics (installed), he or she next pays \$99 to "Austar" to turn on their 12 channel service and then pays \$39.95 per month.

The literature distributed actually claims a 17 channel service with one channel identified as "optional"; World Movies. The Optus B3 12,550 horizontal (Msym 20.000, fec 7/8) service distributed on a national beam was supposed to be operated with Galaxy origin programming by Optus Vision. A receiver for the service late in May showed channels OV1 (as in Optus Vision 1) through OV16 or in some cases G012 through G08, 001 through 008 but in fact as we go to press very few of these channels appear to be operational. Optus had planned to merge their satellite operation with Galaxy but an Australian high court has ruled this cannot be done. As for the residents of NT who were quick off the mark to order from the Easter Bunny, here is what they were promised:

(2) World Movies [optional], (3) Encore, (4) Showtime Movies, (5) Discovery, (6) Darwin ABC service, (7) Darwin SBS service, (8) Darwin NTD service, (9) Fox Sports, (10) BBC World, (11) Nickelodeon, (12) Arena, (13) TV1, (14) RED [renamed 'V'], (15) Country Music TV, (16) CNBC and (17) New World [Chinese movies, news].

As of early June what was actually there was Disney Channel Australia (video only, no audio) on G01 and a sequence of blank or still scenes on the

MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer."

All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) each January in Auckland. Members also participate in policy creation forums, have correspondence training courses available. To find out more, contact (fax) 64-9-406-1083 or use information request card, page 34, this issue of SatFACTS. Page space within SatFACTS is donated each month to the trade association without cost by the publisher.

EASTER BUNNY SPECIAL PRICE

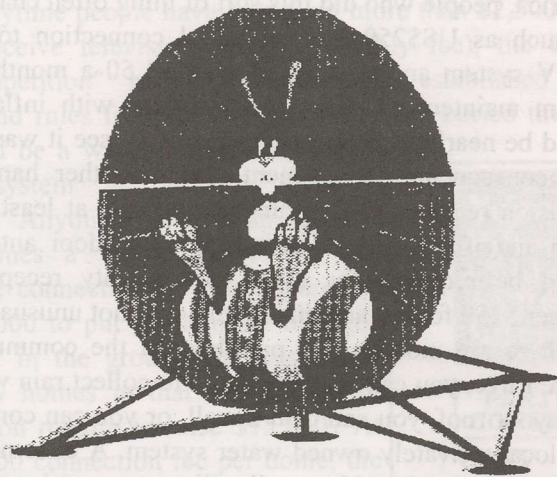
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The pole is concreted at an agreed location and all cables for later motorising and signal expansion are trenched to your viewing point.

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up) and then agrees to pay \$39.95 per month for what purports to be a 12 channel service. There is some confusion at least in the Darwin area about how many channels the viewers will actually receive.

Austar is actually American UIH controlled and it holds regional pay TV licences in a number of areas including Alice Springs. There, they are offering 10 TV channels (and 8 radio channels) received via satellite and redistributed using MMDS (terrestrial microwave). The installation fee is \$100 and the monthly charge \$39.95.

Austar's primary competition in northern Australia are the multiple C-band pay TV service packages originating in and intended for Indonesia, Malaysia and surrounding countries. It will be interesting to see watch how the Australian product does in the marketplace against these established service providers.

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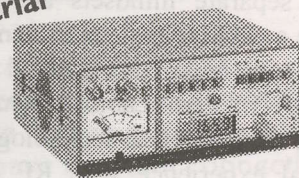
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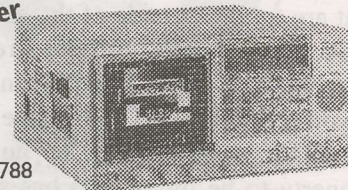


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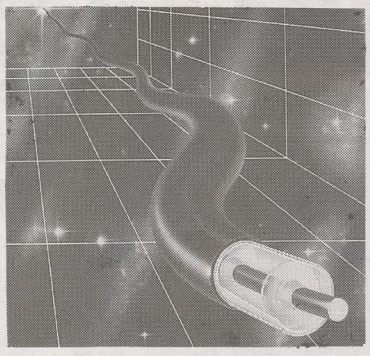
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The CABLE Connection



Funding a new cable television system is a complex process requiring more business expertise than most technical people have available from their own experience. It is the nature of the business that two totally separate mindsets are required to create and operate a cable television system. On one hand we have the obvious need for technical expertise and hands-on skills. A modern cable system is a combination of leading edge satellite technology and a high degree of practical experience with RF distribution systems. A person with the required technical skills can create, on paper, the design of the actual system.

Planning the business side of a cable system is in many ways far more complex. A cable system requires a very significant initial investment in equipment and installation labour before it is ready to connect the first paying subscriber. And in most situations before the first metre of cable can be laid there will be permits and approvals from local or national agencies to be arranged.

Through all of this money to pay for the installation step by step will be required. For most first-time cable system builders, the funds required will be in excess of what they personally have available. And this says that third parties will become involved as investors in the system.

In most first-system situations the third party investors will also be new to the cable business, and are more likely than not to be either relatives or friends of the entrepreneur(s) planning the system. Banks are by their conservative nature seldom willing to lend funding to a first-time cable operator unless the operator has assets that are totally outside of the cable field and sufficiently debt free as to provide reasonable "assets" for attachment in case of bank loan default. In other words, if you are willing to "mortgage your house (farm etc.)" to obtain bank funding to build the system and the property to be mortgaged has sufficient value, you can probably deal with a bank. The chances of obtaining a bank loan based solely upon the merit of your cable TV business plan are very poor.

Similarly, raising funds outside of a circle of family and close friends based solely upon a cable TV "business plan" is also very unlikely. People approached will tell you what a wonderful idea it is, and

commend you for your technical skills and daring but will seldom rush to write a cheque for investment.

So how do you raise capital for a "bold, new business venture" if it is so difficult to gain the confidence of those who might have money to invest?

In the earliest days of cable television, the system was called "Community Antenna Television" (hence the CATV abbreviation that came decades before it became simply "cable TV"). A community antenna was precisely that; one, central antenna system installed for the shared use of the entire community. In these pre-satellite days a community located where off-air TV reception was poor often would "pool" their resources to build one very tall, very sensitive receiving antenna system which everyone wishing TV in the town could "share."

The spark plug behind such a move was often a business person who wished to sell TV sets in town. By creating better quality reception with a "community aerial" he or she knew that more people would invest in TV sets. Under those circumstances, the original intent of the system may well have been only to "cover the original cost" of installation and then to collect a modest monthly fee for system maintenance. In 1950 in North America, people who did this sort of thing often charged as much as US\$250 for the initial connection to the CATV system and then as little as \$1.50 a month for system maintenance. The \$250 amount with inflation would be nearly \$1,000 today so you can see it was not an inconsequential investment. On the other hand, a television receiver in the same period cost at least that much and if you lived where a huge, outdoor antenna would be required for even poor quality reception, another \$250 for the antenna system was not unusual.

There are modern day parallels. In the community where I live, you can build a cistern to collect rain water from your roof, you can drill a well, or you can connect to a local, privately owned water system. A cistern will cost you around \$3,000, a well will cost you at least that much. A cistern collects "free" rain water, a well has a cost per gallon for the well equipment and its operation (electricity). The water company charges \$1,500 to run a PVC line to your home and so much per gallon used per month. If you are building a new home, as a builder, and you want to spend the minimum amount for water to the home, the local water company costs significantly less than building a cistern or drilling a well. Over time, of course, the cost of the water used will exceed the capital cost of either a cistern or a well. But to the builder, this becomes a home owner problem and as a builder he saves money on the initial home cost by connecting to the water company lines.

With the onrush of satellite delivered technology many are forecasting that within five years a majority of homes will receive all or virtually all of their television and information via satellite. Our report this month from SPACE tells of the Austar programming package

being sold in northern Australia with a (A)\$2,390 "antenna system" on offer. This does not include the IRD for the home nor the actual IRD (receiver) installation. Similarly, Galaxy receive system packages are being sold for as much as (A)\$1,700 while in New Zealand Sky Network is presently offering a DTH antenna system with IRD for (NZ)\$650. In both of the Australian cases cited, the consumer ends up owning at least the antenna portion while in New Zealand the consumer receives title to no equipment at all for his or her \$650 investment.

If a family is willing to spend (NZ)\$650 to (A)\$2,390 for an antenna system to receive television, it should be obvious that an alternative plan that offers them a connection to a cable system for something less than the local going rate for a dish system should make some business sense.

Some of the satellite DTH firms are offering financing terms for their dish system installs; not everyone buying into a system such as offered by Austar is forking out \$2,390 up front (plus \$99 for the IRD install and \$39.95 for the first month; a whopping \$2,528.95). Whether the local DTH company offers extended payment terms or not, the opportunity now exists for a cable operator to greatly increase the cable connection fee.

Anytime people have to put out more than \$2,500 just to receive television (plus a monthly fee), the DTH "competition" has very effectively established the ground rules for cable competition. And buried therein could be a way to fund the start-up of a system.

Anything less than \$2,500 becomes a "lower price" for the cable connection. If it costs around \$15,000 to put a kilometre of cable plant in the ground (it does), how many homes in that first kilometre do you require to raise \$15,000? At \$2,500 connection fee per home, the answer is 6 homes. At \$1,500 per home, 10 homes. Or, you can arrange extended payment terms through a local bank (i.e., they take your cable home connection "contract" and convert it into cash while taking over the payment receipts). This is pretty much the way a car dealer "sells his paper" to a bank or finance company - he makes the sale, then takes the contract to the finance company where the car selling price is discounted to allow the finance company to make some money. The car dealer gets virtually all of his

money up front, and the consumer ends up making payments to the finance company.

Where DTH competition is selling antenna systems at inflated prices, there is an opportunity to use their "established price" to create a cable system funding mechanism. When the DTH service is selling systems at a greatly subsidised price (such as the Galaxy \$199 installs in Australia) it becomes less attractive to the consumer to consider cable. On the other hand, the start-up costs for the DTH company mount rapidly when it is subsidising \$800-900 of each installation.

ENTERING THE PACIFIC MARKET?

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Headend Filters
Pay-TV Filters
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SatFACTS Pacific/Asian Region Orbit Watch: 15 June 1997

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Analogue Free-to-Air 57E to 80E	
Sun Music	57E/703 1400RHC
Sun Movies	1342RHC
Gemini	1257RHC
Sun TV	1220RHC
AsiaNet	1170RHC
WorldNet	1100RHC
NEPC	1090/LHC
TVi	1020LHC
Muslim TV	975LHC
ViJAY TV	64E/801 993LHC
Home TV	68.8/Pas4 (?) (?)
ABN	68.8/Pas4 Hz/1365
Sony TV (Hindi)	68.8/Pas4 Hz/1240
Doordar & Iran TV	68.8/Pas4 Vt/1116
CNNi	68.8/Pas4 Hz/1065
TNT/Cart.	68.8/Pas4 Hz/1040
ATN	68.8/Pas4 Vt/972
BBC World	68.8/Pas4 Vt/1350
MTV Asia	68.8/Pas4 Hz/965
Tests	78.5/Th3 Vt/1280
Army TV	78.5/Th3 Vt/1395
TK Rossija	80/Exprs 1475RHC
VTv4	80/Exprs 1275RHC
AST	80/Exprs 1127/RHC

Anal. Free-to-Air 80E to 113E	
Russia 3	80/Exprs 1080RHC
Dub'l II	90/S6 1475RHC
Orbita II	90/S6 1275RHC
Dub'II I	90/S6 1234RHC
Orbita I	90/S6 1208RHC
VTV	91.5/Me1 Hz/1440
Doordar.1 National	93.5/In2b 1030/Vt
Doordar.1	1160/Hz
Doordar.9	1080/Hz
Doordar.7 Telugu	1070/Vt
Doordar.9 Kanada	1180/Vt
Doordar.1	1268/Vt
Doordar.	1310/Vt
Doordar.3	1348/Vt
Doordar 4	1388/Vt
Orbita II	96.5/S14 1475RHC
Madagas-car	96.5E/S14 1325RHC
ERTU Egypt	100.4/As2 1508/Hz
TV Shopping	100.4/As2 1490/Vt
TV Mongolia	100.4/As2 1470/Hz
WorldNet	100.4/As2 1265/Hz
CCTV4	1190/Hz
RTPi	1170/Vt
Dub'l II	103/S21 1475RHC
ART	103/S21 1275RHC
CFI	113/C2 990/Hz
SCTV	113/C2 970/Vt

Anal. Free-to-Air 113E to 145E	
Brunei	113/C2 1010/Vt
MTV Asia	113/C2 1030/Hz
TPI	113/C2 1070/Hz
TV Indosiar	113/C2 1090/Vt
ABN	113/C2 1120/Hz
ANteve	113/C2 1130/Vt
CNNi	113/C2 1183/Hz
GMA	113/C2 1230/Hz
TV3	113/C2 1250/Vt
ATVI	113/C2 1270/Hz
TVRI	113/C2 1310/Hz
RTM	113/C2 1330/Vt
RCTI	113/C2 1408/Vt
CNBC	113/C2 1530/Hz
Test Card	128/Jc3 1065/Vt
Orbita-I	140/S7 1475RHC
NTV	140/S7 1425RHC
Music Asia	142.4/R42 1475LHC
RAJ-TV	142.4/R42 1425LHC
Laos TV	142.4/R42 1375LHC
ViJay TV	142.4/R42 1325LHC
EM TV	142.4/R42 1272LHC
Dub'l-I	145/S16 1275RHC

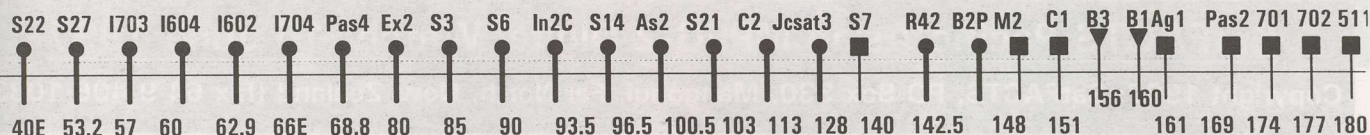
An. Free-to-Air 148E to 180E	
Test Card	148/Me2 1070/Hz
Tests	161/Ag1 1475/Lhc
CNNI	168/Pas2 1183/Hz
CNN Feeds	168/Pas2 1155/Hz
NHK	168/Pas2 1114/Hz
TV Shopping	168/Pas2 1400/Hz
Feeds	174/I701 984RHC
Feeds	174/I701 973RHC
Feeds	177/I702 984RHC
Feeds	177/I702 963RHC
Feeds	180/I511 1430RH
WorldNt	180/I511 1175RH
RFO	180/I511 1105RH
Feeds	180/I511 1020LH
Feeds	180/I511 984RHC

Encrypted Analogue	
Discov. India	68.6/Pas4 1365/Vt
Sky Racing(a)	100.4/As2 11430/Vt
ESPN (d)	113/C2 1030/Hz
HBO Asia (d)	113/C2 1150/Hz
TNT + (d)	113/C2 1390/Hz
Discovery (d)	113/C2 1430/Hz
Discovery (c)	168/Pas2 1374/Hz
ESPN (a)	168/Pas2 1288/Vt
TNT + (a)	168/Pas2 1218/Vt

NON MPEG-2 DIGITAL SERVICES

People's Net (GI 1.5)	113/C2 1110/Hz
RPN-9 (GI 1.5)	142/G2 1375Lhc
Fox/Prime (SA 1.5)	168/Pas2/ 1161/Vt
Filipino Channel (GI 1.5)	168/Pas2/ 1060/Hz

For MPEG-2 format digital, see pages 26/27.



OPTUS B3 156E (Ku only)

ABC WA	1425/Vt B-Mac
Central ABC HACBSS	1393/Hz B-Mac
Imparja	1351/Vt
GWN	1297/Vt
Net 9, Sky specials	1233/Vt B-Mac
OptusVis. (analogue)	1230/Hz
ABC NT/ Imparja N.T.	1201/Hz (centre) B-MAC
Galaxy	1137/Hz Irdeto Mpeg 2
Galaxy	1073/Hz Irdeto Mpeg 2
ABC SA	1041/Vt

Optus A3/152E

ATN7png	1297/Vt
ATN7png	1430/Vt

Palapa C2 Ku (seen South equator)/113E

Test bars	11.148/Vt
-----------	-----------

MeaSat 2 148E

Tests	1065Hz*
-------	---------

* Colour bars, audio 6.8;
C-band covers
Australia, NZ

(a) B-MAC encrypted, no access available; (c) MPEG,
encrypted, access may be possible (d) B-MAC,
subscriptions available in some geographic areas.

OPTUS B1 160E (Ku only)

Net 9, Sky feeds	1425/Vt B-Mac
Data	1402/Hz
QSTV	1377/Hz B-Mac
SE ABC HACBSS	1370/Vt B-Mac
SE SBS HACBSS	1344/Vt B-Mac
NE SBS HACBSS	1339/Hz B-Mac
NE ABC HACBSS	1313/Hz B-Mac
Sky Channel	1296/Vt B-Mac
ABC Radio	1276/Hz (digital)
OmniCast	1270/Vt (FM/FM)
ABC feeds	1247/Hz Pal
Sky Nz	1245/Vt VidCrypt
Net 9 feeds	1219/Vt Pal&Ntsc
	1214/Hz
Net 10	1182/Vt E-Pal
Net 9	1180/Hz E-Pal
Net 10 feeds	1155/Vt Pal
QTQ9	1145/Vt
Net 7	1120/Vt E-Pal
Net 9 feeds	1091/Vt Pal
CAA air to ground	1009/Vt Nbfm

PAS-2 169E (C + Ku)

CCTV3,4, test	1433.5/Vt (Sa9223)
PAS2 tests	1405/Hz
Value Ch.	1400/Vt
Discovery PowerVu	1374/Hz (Sa9223)
ESPN	1288/Vt B-Mac
MPEG-2 PowerVu Sylmar	1249/Hz (Sa9223)
TNT+ (1/2Tr)	1218/Vt B-Mac
CNN+ (1/2Tr)	1183/Hz
FoxSports	1161/Vt (Sa9222)
NHK	1115/Hz
Filipino Channel	1060/Hz (GI Mpeg)
NBC Mux MPEG	1057Vt (Pace)
MPEG-2 PowerVu HonKong	1002Vt (Sa9223)
TCS Sing.	967/Hz

PAS-2 Ku

Napa TC	12,415V
H-Life	12,415V
Super Ch Taiwan	12,485H (MPEG)
Bloomb.	12.642V
K-TV	12,735V (MPEG)

Agila 1, ex-Rimsat R41
at 161E, Palapa C1 at
150.5E and B2P at
144E are functional and
some narrow band
services (non-video) and
testing has been
reported.

Intelsat 701 174E

Feeds	963
Feeds	984

Intelsat 702 177E

AFRTS	973
Feeds	984

Note: Space Systems
177E Ku testing;
see "Observers"

Intelsat 513 177W

Feeds	963
Feeds	984

(513 Ku)

Service	RF Freq.
US Nets	10.980V
NBC	11.015V
Feeds	10.510V

Ku Services

Intelsat Ku band
services shown here
are boresighted to
Japan and nearby
Asia, have not been
reported south of
equator. At boresight,
signals of <2m levels.

TDRS5 / 174.3W

Fuji TV	1305 Hz
BBC World	1163Hz MPEG

Intelsat 511 180E(W) +/- 3.1deg.

TVNZ	964/Dmv 3000
TVNZ	972/Dmv 3000
TVNZ	980/Dmv 3000
TVNZ	988/Dmv 3000
Occ Vid.	1,020**
9 Aust.	1,025
SCPC	1,054 **
RFO Tahiti	1,105
Asian	1,130
World- net	1,175
NHK	1,225**
ABC Oz	1,256
7 Oz	1,274
10 Oz MPEG	1,385 (PwRvu)
Keystone	1,432

* RHC & LHC
** LHC only

(511 Ku)

NHK	11.135H
CBS	11.475H
CNN	11.508H

TDRS5 "north"
only

UPCOMING SATELLITE LAUNCHES

Intelsat 802 to 174E - June
China DF3- location unknown
Filipino Agila 2 to 153E
ApStar2A to 77E
AsiaSat 3 to 105.5E - Oct/Nov

AS2

SKY RACING

4015 H3

3

42

18.000

NOKIA 20

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 June 1997

Copyright 1997: SatFACTS, PO Box 330, Mangonui, Far North, New Zealand (fax 64-9-406-1083)

Bird	Service	RF/IF & polarity	# Programme channels	FEC	Msym
I704/66E	CFI	4055/1095 RHC	4	3/4	27(.500)
PAS-4/68.5E	Walt Disney	3982/1168 Hz	2	3/4	6(.632)
Thaicom 78.5E	UTV	3920/1230 Hz	6TV (#1)	3/4	27(.500)
	UTV/MCOT	3880/1270 Hz	6TV (#2)	3/4	27(.500)
Measat 1/91.5	India Bouquet	12284/12346Vt	10+TV?	7/8	30(.000)
As2/100.5E	European Bouquet	4000/1150 Hz	6TV, 12 radio (#3)	3/4	28(.125)
	Hubei TV (HBTVM Main)	3854/1296 Hz	2	3/4	4(.418)
	Hunan TV (SRTC)	3847/1303 Hz	1	3/4	4(.418)
	Guandong TV (GDTV)	3840/1310 Hz	1	3/4	4(.418)
	Inner Mongolia TV Zizhiqu	3828/1322 Hz	2	3/4	8(.397) (1-China) (2-Mongolia)
	APTV London	3800/1350 Hz	1	3/4	5(.631)
	WTN Jerusalem/London	3790/1360 Hz	1	3/4	5(.631)
	WTN London	3786/1364 Hz	1	3/4	5(.631)
	Liaoning TV (Service 2)	3734/1416 Hz	1	3/4	4(.418)
	Jiangxi TV (JX Sat TV)	3727/1423 Hz	1	3/4	4(.418)
	Fujian TV (SETV)	3720/1430 Hz	1	3/4	4(.418)
	Henan TV Zenghou	3713/1437 Hz	1	3/4	4(.418)
	Henan TV Main	3706/1444 Hz	1	3/4	4(.418)
As2/100.5E	STAR TV (Hong Kong)	3900/1250 Vt	3TV, 1 Radio (#4)	1/2	28(.100)
	"QQQ" China (Shaanxi)	3813/1337 Vt	1, 1 Radio	3/4	4(.418)
	Guangxi GXTV	3805/1345 Vt	1, 1 Radio	3/4	4(.418)
	Rebar TV Taiwan	3785/1365 Vt	4TV (#5)	3/4	18(.000)

Interoperable Receivers (a)

N163/17X/2X, HS-100C

HS-100C

HS-100C, Philips, probably others (Will be CA)

HS-100C, Philips, probably others (Will be CA)

Philips, SK888 (w/CAM)

DMV, HS-100C, Gng, N163, /17X/2X, N2000, P400(b), P500, Pn520/630, Sk888

HS-100C, N163/17X/2X, N2000, Ph3950/11

HS-100C, N163/17X/2X, N2000, Ph3950/11

HS-100C, N163/17X/2X, N2000, Ph3950/11

HS-100C, N163/17X/2X, N2000, Ph3950/11

DMV, HS-100C, N163 /17X/2X

DMV, HS-100C, N163/17X/2X

DMV, HS-100C, N163/17X/2X

HS-100C, N163/17X/2X, N2000, Ph3950/11

HS-100C, N163/17X/2X, N2000, Ph3950/11

HS-100C, N163/17X/2X, N2000, Ph3950/11

HS-100C, N163/17X/2X, N2000, Ph3950/11

HS-100C, N163/17X/2X, N2000, Ph3950/11

DMV, HS-100C*, N163*/17X+/2X

HS-100C, N163/17X/2X, N2000, Ph3950/11

HS-100C, N163/17X/2X, N2000, Ph3950/11

Pv9223 (CA)
[Video inverted?]

*/ Some Nokias have 20 second lock-up on NTSC, (some versions of) HSS-100C may have lip sync problems with NTSC.

ILS 02
Pps 2-1346
Analys

TID # (12 Di) - R.H.
UA# - 741
D4223 - (10)(3)(3)

SatFACTS Digital Watch: 15 June 1997 ♦ continued

Bird	Service	RF/IF & Polarity	# Programme channels	FEC	Msym	Interoperable Receivers (a)
(As2/100.5E)	Myanmar TV	3766/1384Vt	1TV	7/8	5(.080)	HS-100C
	STAR TV Hong Kong	3700/1450 Vt	5TV, 1 radio (#6)	3/4	28(.100)	Pace DVS-211 (CA)
C2/113E	Star Indovision	3500/1650Hz 3580/1570Hz	20 TV (#7)	7/8	26(.850)	Pace DVS-211 (CA)
	MegaTV	3780/1370Vt	7TV (#8)	3/4	27(.500)	HS-100C, N163/17X/2X
AP1/138E	Reuters	3732/1418Vt	1TV, data	3/4	5(.632)	N163/17X/2X
Optus B3 156E	Galaxy	12.438Hz (d) 12.373Hz	20+TV (#9)	3/4	29(.473)	Gng, P400, P500, Pn520, Pn630, Sk888 (c)
Optus B3 156E	Optus Vision	12.550Hz(d)	16TV, 8 radio (#9A)	7/8	20(.000)	(when testing is over, only IRDs with CAM)
Optus B1 160E	Aurora (MPEG test)	12.373Hz	2+ TV (#10)	2/3	30(.000)	N163/17X/2X, HS-100C
	ABC Exchange	12.539Hz 12.548Hz 12.557Hz	1 each	3/4	6(.980)	Pv9223, HS-100C, N2X (FTA)
PAS-2 169E	Hong Kong PowerVu	4148/1002 Vt	8TV (#11)	2/3	24(.430)	Pv9223, HS-100C(*), N2X* (some FTA)
	NBC Hong Kong	4093/1057 Vt	7TV (#12)	3/4	29(.473)	HS-100C, Gng, N163/17X/2X, P400 (b), P500, Pn520, Pn630, Sk888
	JET Singapore	3962/1188 Vt	2TV (1-Ntsc, 2-Pal)	1/2	13(.740)	Pv9223 (CA)
	Ku California PowerVu	12.415/1115 Vt	7TV (#13)	3/4	30(.800)	Pv9223, HS-100C(*) N17X/2X(*), (some FTA)
	CCTV China PowerVu	3716.5/ 1433.5 Vt	3TV (#14)	3/4	19(.850)	Pv9223, HS-100C, N163/17X/2X (FTA)
	TCS Singapore	4183/967 Hz	2TV (#15)	1/2	6(.620)	Pv9223, HS-100C N17X/2X (FTA)
	AAR-ART/ RAI Int	4153/997 Hz	3TV (#16)	3/4	5(.632)	Pv9223, HS-100C N17X/2X, (continues FTA)
	SCPC3	3942/1208 Hz	1TV	2/3	6(.620)	Pv9223 (CA)
	California PowerVu	3901/1249 Hz	7TV (#13)	3/4	30(.800)	Pv9223, HS-100C (*) N17X/2X (*), (some FTA)
	Satcom 1-6	3862/1288 Hz	6TV	7/8	19(.465)	Pv9223 (CA)
	Walt Disney Australia	3804/1346 Hz	1TV	5/6	21(.093)	Pv9223 (CA)
	Discovery Singapore	3776/1374 Hz	7TV (#17)	3/4	19(.850)	Pv9223, HS100C, N2X (occasionally Ch. 2 FTA)
1702/177E	AFRTS	4177/973 LHC	8TV, 12 radio & data (#18)	3/4	28(.000)	Pv9223 (CA)
	SPACE TV Systems	12.612/1312 Hz	7TV (#19)	3/4	26(.694)	Panasat 630 (with CAM) (will be CA only)
1511/180E	Canal Plus	4096/1054 LHC	1TV (?)	3/4	34(.368)	Sagem ISD 2050 (?)

12.543
12.620

NO16

SatFACTS MPEG-2 Digital Watch: 15 June 1997 ♦ Support Data

Receivers: (a) By our definition, a receiver is deemed "fully interoperable" when it will turn on and routinely receive the service in question with no persistent glitches, no special tricks (such as loading software from an external source). Receivers in abbreviated listings are those that have shown these qualities for the transmission service listed. There is a time lag of up to 30 days after introduction of new receivers before sufficient data is accumulated for inclusion here. Nomenclature: DMV is DMV/NTL 3000 (a professional model receiver); HS-100C is Hyundai HSS-100C, designed for China; Gng is Grundig DTR1100 (manufactured by Panasat - see SF#31, p. 15); N163 is Sweden sourced Nokia 9500 S with version 1.63 software; N17X is German/European Nokia "d-box" software modified for C-band use; N2000 is Nokia sourced IRD created for Chinese SCPC market with AsiaSat 2 and Intelsat manual search software; N2X is May/June 1997 version of 9500 S; Ph3950/11 is Philips DVB IRD created for China SCPC project; P400 is Pace DGT400; P500 is Pace DVR500; Pn520 is first version Panasat (July 1996); Pn630 is latest version Panasat (February 1997); Pv9223 is PowerVu by Scientific Atlanta; Sk888 is Skandia DigiScan. (b) P4500 (DGT400) will only work with EBB (et al) when it has not been over the air enhanced (upgraded); (c) SK888 will not work with conditional access (pay) services.

Bouquets: 1) Thailand UTV: (1) CNN, (2) TTV, (3) ESPN, (4) HBO, (5) Ch. 5, (6) itv; 2) Thailand UTV/MCOT: (1) Ch. 9, (2) Discovery, (3) Ch. 3, (4) TNT, (5) Star Sport, (6) Ch. 7; 3) European Bouquet: (1) Deutsche Welle, (2) MCM, (3) RAI International, (4) RTVE, (5) TV5 Paris, (6) [when operating] Deutsche Welle special programme channel with MediaNet VBI included [lines 10-15, requires DMV M2/Pro/Txt board inserted in 3000 series receiver]; Radio (1) DW#1 (stereo), (2) DW#2 (stereo), (3) DW#3 (stereo), (4) YLE (left) & RCI (right), (5) SRI (l) & WRN (r), (6) REE, (7) DW#1 (stereo), (8) DW#2 (stereo), (9) DW#1 (stereo), (10) NN RA6, (11) NN RA8; 4) STAR TV Hong Kong: (1) STAR + [Japan in NTSC] (2) horse racing feeds very 'occasional' to TCNA Australia, (3) Sky News London, ; 5) Rebar Taiwan: (1) "U1" [movies], (2) "U2" [news], (3) "U3" [sport, cartoons, general entertainment], (4) "Rock TV"; 6) STAR TV Hong Kong: (1) ESPN Contributory, (2) Racing Ch., (3) Star Movies SEA, (4) Star Chinese, (5) NBC, (6) CNBC, (7) Sky News, (8) VIVA Cinema; 6) Indovision: (1) HBO Asia, (2) STAR Movies SEA, (3) Film Indonesia, (4) MGM Gold, (5) ESPN Asia, (6) STAR Sport, (8) Channel 'V' International, (9) Channel 'V' Asia, (10) RCTI, (11) STAR +, (12) Discovery, (13) STAR Movies and NBC Asia, (14) Phoenix Chinese, (15) CNN, (16) BBC World, (17) CNBC, (18) Cartoon + TNT, (19) Preview 1, (20) Preview 2; 8) MegaTV: (1) CNNI, (2) Discovery, (3) ESPN Asia, (4) HBO Asia, (5) Cartoon + TNT, (6) MGM Gold, (7) Cinemax; 9) Galaxy: Presently 20+ programme channels. 9A) Optus Vision tests of 16 programme channels, programming decisions to be finalised; 10) Aurora: (1) ABC SA, (2) Australia Sky News; 11) Hong Kong PowerVu: (1) CTN 1, (2) CTN II, (3) TVBI Hong Kong, other feeds [NTSC], (4) Ad-hoc 1 PA [PAL], (5) Ad-hoc II [NTSC], (6) ABN, (7) CTN II, (8) CTN I; 12) NBC Hong Kong: (1) CNBC, (2) CNBC Mandarin A, (3) NBC Asia, (4) colour bars, occasional feeds, (5) CNBC Taiwan, (6) NBC "2" Asia/Taiwan, (7) Colour bars, "future" use; 13) California PowerVu: [Note: Ku band listing may not be operating except for test periods, programming line-up identical to C-band] (1) CMT [NTSC], (2) CBS feeds, others including Canadian CTV, (3) ESPN, (4) EWTN [NTSC] with Global Catholic Radio channel 2, R, (5) BBC World [NTSC], (6) Bloomberg Financial [NTSC], (7) Golf Channel [NTSC]; 14) CCTV China: (1) CCTV4, (2) CCTV3 [(3) CCTV tests ; 15) TCS Singapore: (1) TCS Test, (2) TCS Default [repeats channel 1]; 16) SCPC3: (1) ad-hoc use, (2) AAR/ART, (3) RAI International; 17) Discovery: (1) Disc. Aust/NZ, (2) Disc. default, (3) Disc. Japan, (4) Disc. SE Asia, (5) Disc. Taiwan, (6) Disc. Philippines, (7) Disc. China; 18) AFRTS: (1) News, Sports [ACII, CW, RR, 9.6 kbps, TV], (2) Spectrum [Urban, 64 kbps], (3) AFN Pacific [TV], (4) Channel 1 - Mirror [TV], (5) AFN Korea [contingency, 1.536, TV], (6) The Jim Lambert Test Channel [!!!!], (7) EPG, voiceline, (8) EPG, u/i voiceline, (9) AFN Atlantic [Top 40, HR, NPR, TV], (10) AFN Americas [Top 40, TV], (11) AC1, (12) Country, (13) Adult Rock, (14) NPR [US National Public Radio], (15) Urban, (16) Pure Gold, (17) Top 40, (18) Hard Rock (19) Contingency.; 19) SPACE Systems: (1) Taiwan TV, (2) China TV, (3) Chinese TV System, (4) Formosa TV, (5) Formosa News, (6) NHK Asia-Mandarin dubbed, (7) Korean KBS; NOTE: Listings in **bold face** are PowerVu transmissions that are typically (but not always) FTA (free to air).

MPEG-2 DVB RECEIVERS: [Data here is believed accurate; we assume no responsibility for errors in this volatile area!]

DMV/NTL 3000. Skandia Electronics Pty Ltd (tel 61-3-9819-2466)
Espano. Antares Satellite (tel 61-7-3205-7574)
Grundig (Gng) DTR1100. Av-Comm Pty Ltd (tel 61-2-9949-7417)
Hyundai-TV/Com. Model HSS-100C is officially available from Pacific Satellite (tel 61-7-3344-3883) and Skandia Electronics (tel 61-3-9819-2466); Antares (61-7-3205-7574) is disposing of their final shipment as we go to press, will not handle in future.
Nokia 9500 S (V1.63). This version is no longer available although it had ability to identify Msym and FEC parameters of unknown carriers. (V1.7X) was a German language "d-Box" version originally imported by OPAC; it functioned with the same parameters as the V1.63. (V2.X; 2.233, 2.034 and others perhaps not yet identified) are current (late May/June) software versions that allow virtually unlimited stacking of bouquets and programmers and for at least the 2.233 version also allow red menu correction of NTSC glitch. Sources known include: Antares Satellite (tel 61-7-3205-7574); AV-COMM Pty Ltd (Tel 61-2-9949-7417); Pacific Satellite (61-7-3344-3883), SCITEQ (61-8-9306-3738)
Nokia "d-box" (V1.7X) suitable for C-band use. Instructions, on-screen prompts may be in German. No longer available.
PACE DGT400. Through Galaxy offices, Australia.
PACE DVR-500. Bay Satellite TV Ltd. (tel 64-6-843-5296)
Panasat 520 (Pn520). OPAC Pty Ltd (tel 61-2-584-1233)
Panasat 630 (Pn630). Antares Satellite (61-7-3205-7574)
PowerVu D9223. Telsat Communications Ltd. (tel 64-6-356-2749)
SAGEM ISD2050. SAGEM SA, Mrs. Salima ALAOUI (tel 33-1 40 70 63 63)
Samsung VS-2000 (ver 1.31). Pacific Satellite (tel 61-7-3344-3883)
SK888. Skandia Electronics Pty Ltd. (tel 61-3-9819-2466)

Receiver Swaps: Contact SatFACTS for forwarding of offers (fax 64-9-406-1083)

#697A: Looking for receiver authorised for STAR TV AS2 3700Vt (Pace DVS-211-CA).
 #697B: Want SA D9223 authorised for at least AFN Pacific.
 #697C: Want CDE-2000 with at least 8 months left to run on subscription.

WITH THE OBSERVERS

AT PRESS DEADLINE

"They look like MPEG signals on a spectrum analyser - they are not" reports observer Stu McLeod concerning Measat-2 data signals now found on the same horizontal transponder group that has been seen testing with an analogue test pattern. "The Nokia consistently shows Msym rates in the 1.X region" says McLeod.

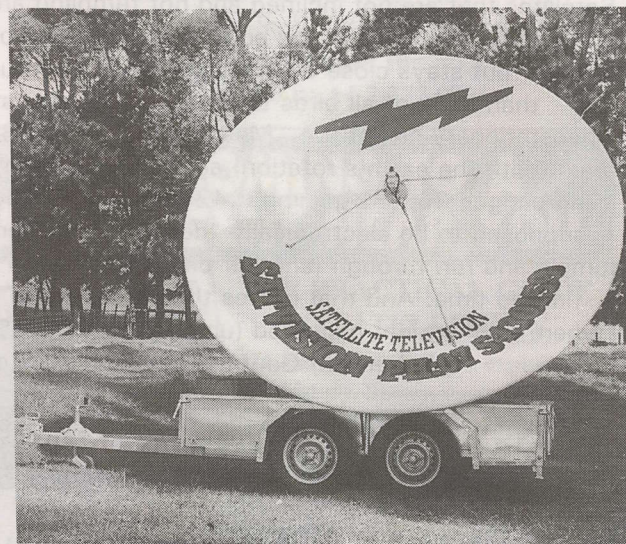
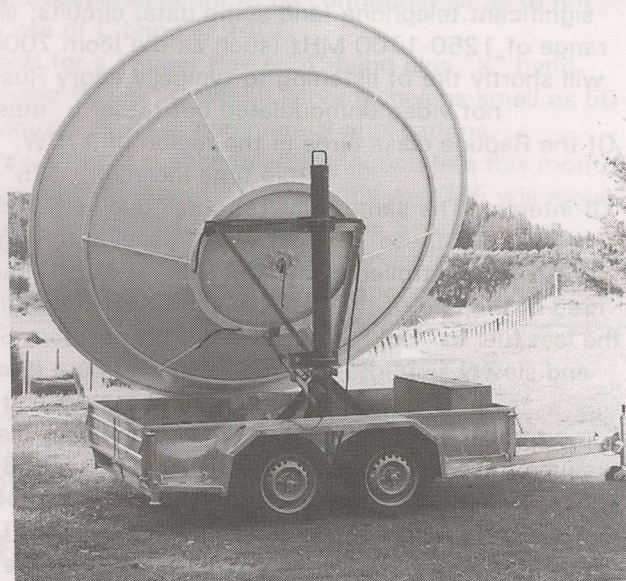
Taiwan based SPACE TV Systems Ltd is now operating from Intelsat 702 (177E) using MPEG-2 digital format that is FTA at press-time (expected to go conditional access shortly). Early in June, there are 6 programme channels operating at 12.612 GHz horizontal using the unusual rate of Msym 26.694 and FEC of 3/4. Along Australia's Gold Coast, a 2.4m antenna is certainly too large (but provides plenty of rain fade margin) and the Panasat IRD 630 was producing high quality pictures for a number of reporters. Programme channels reported include (1) Taiwan Television, (2) China Television, (3) Chinese Television System, (4) Formosa TV (scheduled from June 12), (5) Formosa News Channel, (6) NHK Asia (with Chinese subtitling scheduled from 1 July) and (8) Korean KBS (also scheduled from 1 July). They want distributors in Australia (this is an Australian spot beam); contact **James Tzeng** at tel ++886-2999-2939 or fax ++886-2999-2989. Note: They want only distributors capable of handling large quantities of product and a co-operative arrangement between smaller dealers might be necessary.

Tests of ex-RAJ-TV super power C-band transponder (R6) from Agila 161E location in May proved nothing significant except that the satellite still works at this new location (was previously at 130E). The tests included requests for signal reports to a New Zealand fax number. No permanent use of this high power global beam transponder from this location is presently planned although Filipino sources suggest there is a very small possibility that it could be put into service in half-transponder format to carry a pair of Philippines TV channels on an interim basis. The 8 days of testing, typically 0300-0800 UTC on LHC IF 1475, consisted of colour bars, some video (CNNI, TVSN) lifted from Palapa C2 feeds as received at the Subic Bay (Philippines) uplink that conducted the tests.

JcSat 3 at 128E is once again running colour bars (1065 IF, vertical); most Australian and NZ reporters say the bars are a couple of dB "hotter" now than when they were previously seen.

Singapore's Asia Broadcast Centre has opened a PowerVu feed to PAS-4; first service there is TV Shopping Network which is being linked to Europe/Africa.

Thaicom 3 is now firmly located at 78.5E but **Mark Long** (Thailand) reports, "There will be no traffic on the extended C-band portion that will serve Australia until September." Mark advises there will be six extended-Cs capable of serving



HAVE DISH - will travel. DTH dealer Dennis Wormington (Tauranga, NZ) demonstrates on site for potential customers with this trailer mounted rig

Australian all horizontal, at 3440, 3480, 3520, 3560, 3600 and 3640. There will be some major difficulties getting proper system performance from feeds and LNBs at these extended

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for July15th issue: July 3 by mail (use form appearing page 34), or 5PM NZT July 4th if by fax to 64-9-406-1083.

-Things That Go Bump In The Night-

Observer Stu McLeod (Napier, NZ) queries: *"I have found an analogue P3 level black video carrier at approximately 170W, RHC on 3.4650 (1685IF). This would be in so-called extended C-band; any other reports?"*

Each month NASA's Goddard Flight Centre issues a complete catalogue of "everything in (or near) geostationary orbit." The May 1st list includes 23 satellites located (as of 1 May) between 180E and 165W;

11 of these are Russian origin and 4 of these are Raduga class. The Raduga satellites operate in the expanded C-band region (3.45 to 3.95 GHz) which would fit a carrier at 3.465. Raduga satellites can carry significant telephone (and some data) circuits; an (FM) communications receiver capable of tuning the IF range of 1250-1700 MHz (such as the Icom 7000) can often isolate (receive) these individual signals (you will shortly tire of listening to typically angry Russians shouting at each other!). A "P3 analogue carrier" is not video unmodulated but rather a "master carrier" for a family of narrowband circuits.

Of the Raduga class birds in the region of 170W, "21" at 189.87W has an inclined orbit of ± 6.5 degrees (big time inclined!), "25" at 190.61 is ± 4.33 degrees.

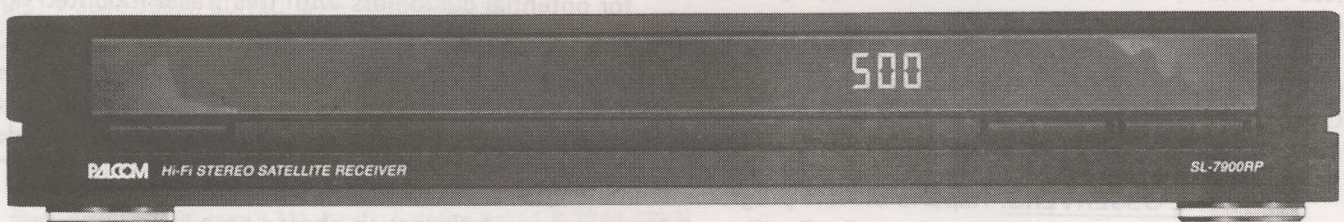
Of interest: The same May 1st catalogue lists 135 satellites within the geostationary "belt" between 100E and 180E. Of these 135, 73 were "passing through" this region of the belt. How's that? Satellites no longer able to be controlled cartwheel along the belt dragged by gravity or kicked by the last hydrazine propellant fired at the end of the satellite's life. When a bird is no longer able to be controlled, it is practice to use up the last fuel to "kick" it out of the orbit position. Some go high and leave geostationary orbit, some go "low" and slowly spin into the earth's atmosphere (the least desirable) while most simply tumble end over end travelling around (and around and around) near the geostationary orbit belt.

Some tumble quite rapidly and cover significant distances each day (measured in "degrees drift per day"). For example, on May 1st Meteosat 3/P was at 119.53E but tumbling west at 11.96 degrees per day (i.e. on May 2nd it was at 107.57E). Ekran 17 was at 135.54E and tumbling west at 15.80 degrees per day. As of May 1st the "fastest bird in the sky" (100E to 180E) was something nicknamed OPS 9438 travelling west at 17.45 degrees each 24 hours (plus, inclined at ± 14.00 degrees).

Satellites that are not inclined and not tumbling are typically located between 35,760 and 35,800 km above the earth's surface at the equator. An inclined bird such as I511 (180E) wanders north and south of the equator but stays close to the geostationary altitude window (in the case of 511: 35,771 to 35,800). More than 90% of all birds tumbling west (against the rotation of the earth on its axis) are above the geostationary height (i.e., Meteosat 3P at 36,761 apogee to 36,728 perigee). Conversely, most tumbling east (with the earth's rotation) are below the belt (i.e., Arabsat 1B was at 146.44E May 1, apogee 35,795 and perigee 35,711 gaining 0.42 degrees per day). There are far fewer below than above. "Tumblers" are supposed to be electronically "dead" (no further functioning transponders) but the odds are that as they tumble and run through (another bird's) command signals or recycle their ailing systems they do turn on from time to time. And that makes them possible to catch operating, however briefly, from a spot in the sky where they are not expected (unless you are NASA and tracking them). Happy hunting! (and thanks to Jim Roberts of Gourmet Entertaining, Los Angeles for the monthly NASA updates)

ENTERING PHASE TWO: SatFACTS 1997 SUBSCRIBER

**READER Philip Spora of Levin, New Zealand has just won a fabulous
Palcom SL7900RP Hi-Fi Stereo Satellite Receiver!**



On October 5th, SatFACTS will conduct a second draw for a Dynasat 300P Low Threshold Receiver with dual axis positioner. If you have been routinely entering each month, you are already "in the draw." If not, why not get the monthly contest entry habit? Full details and contest rules available to any SatFACTS subscriber!

-Satellite Launch Updates-

SF#31 (p. 30) listed the announced C and Ku band satellites scheduling lift-off and new service in the Pacific + Asia region during the balance of 1997. In the interim 90 days a number of changes and additions have taken place.

- 1) PanAmSat PAS-8, scheduled for first-half 1998 launch to 171E with C and Ku band on board is reported to NOT contain Ku band beams capable of serving New Zealand. The precise footprints expected have yet to be published, however.
- 2) A new Orion C + Ku band bird is announced for 139E to be launched in last quarter of 1998. The bird will have 10 C-band and 33 Ku band transponders; the C-band transponders are to be configured so as to not interfere with any normal Russian use of C-band at 140E.
- 3) PSN Indonesia has contracted with Space Systems/Loral for a "Super Power" C-band plus "X" band satellite which is scheduled for either 118E or 134E. The "Super Power" C would serve dishes as small as 50 cm at boresight. "X" band is 7 to 8 GHz, not previously used for commercial applications.
- 4) Intelsat I802 with 36 C-band and 6 Ku-band transponders on board is scheduled for launch late this month to 174E. Assuming a successful launch and no change in deployment plan, I701 presently at 174E will move east to 180 where it will replace aged I511. Time frame for 701/511 switch over is September.
- 5) AsiaSat 3 scheduled for 105.5E to replace As1 is now claiming it could launch as soon as late in October which would suggest a November turn-on. Previously, December launch was announced.

range frequencies. Perhaps a reader with knowledge of how 3.7-4.2 feeds and LNBs are likely to cope as low as 3440 can advise. The other C-band Thaicom services will include six vertical polarised transponders in the same 3.4 - 3.7 GHz region as well as 12 "standard" C-band transponders; all vertical.

Les Brooks (Alice Springs, NT) reports seeing what he believes to be Thaicom 3 at 78.5E with Army TV at IF 1395Vt; P2/3 in level. Les also finds VTV (Vietnam) on Measat 1 at 91.5E (IF 1440, Hz), P3.

Measat 2 (148E) began transmitting a test card late in May (4080/IF1070 Hz, audio on 6.8) which observers from New Zealand to at least middle Australia report is "very hot;" observer **D.T. Ditcham** (WA) reports the test card P3 on his 3m KTI dish. A total of six transponders are supposed to be available on this beam, no known customers at this time.

Observer **D. Morris** (Bangkok) reports his Hyundai HSS-100C provides perfect reception from the elusive Burma "Myanmar TV" (AsiaSat 2, 3766 Vt). Strangely, the Hyundai appears to be the only receiver capable of making this service play (no version of the Nokia has done so, to date). Morris asks how you determine the PID numbers for various services that refuse to give out that information. The answer is - some receivers (SA D9223, some software versions of the Nokia 9500 S) will "reveal" the PID numbers even if they are unable to properly decode the data stream. SF understands Hyundai claims their receiver will also do this with a "secret menu" but to date the secret has been well protected.

Steve Jepson (Levin, NZ) reports locating the details of the French Canal Plus feed to the Pacific on Intelsat 511 (180E). He suggests left hand circular, IF 1054/RF4096 with Msym of 34.368 and FEC of 3/4.

Francis Kosmalski (Auckland, NZ), who has been promised a software upgrade for his SA D9223, reports that as of June 7 the new software has not arrived at SA Sydney. SA is being quite guarded about just what the "software upgrade" will actually do, claiming only that they are certain it will allow access to the NBC Asia bouquet. Beyond that - no promises. The charge quoted to Francis is A\$90. As SA fine tunes the software in the D9223, with the intention of making the receiver perform better for their own proprietary PowerVu services, unfortunately the new software further restricts their ability to make the receiver play on non-PowerVu services.

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Sign-Off

The Hyundai Affair

It began innocently enough; Korean firm Hyundai contacted a number of groups in the Pacific region late last year to advise they were ready to produce a pair of MPEG-2 IRDs; one for the North American market with a CA module, one for the rest of the world without CAM. Garry Cratt at AV-COMM Pty Ltd was one of those responding and early in 1997 he received a prototype unit for evaluation.

Cratt believed the prototype unit showed promise (at the time it arrived, it was the first non-PowerVu IRD that would even access the PowerVu services) but also believed that Hyundai could make some changes to improve the saleability of the receiver in the Pacific. He communicated his suggested changes to Hyundai and believed Hyundai had agreed to make certain changes. One of those most basic was Cratt's suggestion the receiver be equipped with a UHF TV remodulator having a 5.5 MHz aural subcarrier; the prototype was designed with a 6.5 MHz aural sub-carrier which is fine for the China market but quite useless in PAL B or G format regions (China uses PAL D, an analogue artefact).

The first receivers were scheduled into Australia very late in April; Cratt believed two things: (1) Hyundai had agreed that for the balance of 1997, AV-COMM was to be the exclusive distributor of the receiver in Australia/NZ, and, (2) only the units he had ordered would have the requested PAL B/G modifications.

It was Pacific Satellite, a distributor in Brisbane linked with a firm of the same name in Hong Kong, that received the first units. Cratt believed Pacific got product only because they were being trans-shipped from the Hong Kong office. He reluctantly accepted this situation knowing there was little he could do about it, and then discovered his own units contained none of the requested modifications. Angry at not having the exclusive he believed he had coming, and disappointed that the IRD he had promised buyers would be available was not even being manufactured, Garry Cratt sent out a letter to (he says) "13 people who had ordered the 'AV-COMM Version' Hyundai," advising them the receiver would not be available.

In explaining why, he said some things about the way he felt AV-COMM had been mistreated by Hyundai and made several unkind statements concerning the Hyundai version being distributed by Pacific.

At least one copy of the AV-COMM letter to people who had ordered the special receiver found its way back to Hyundai. D.M. Yoon, General Manager of the DVS Sales Department at Hyundai, on May 29th wrote about this letter:

"We are unhappy to see AV-COMM's behaviour. We have never committed the exclusive distributorship (for the HSS-100C) to any company in Australia. We think that AV-COMM's purpose is to try to harm our receiver in order to make the dealers concentrate on the product from his changed vendor; Nokia."

Mr. Yoon makes the further point that, "We have selected two distributors (in Australia); Pacific Satellite and Skandia Electronics." Angela Kittell, Sales Representative for Pacific, advises, *"We requested clarification from Hyundai Industries Co. They have in turn advised of their unhappiness with the way this matter has been handled (by AV-COMM). Skandia and ourselves have both ordered the same version of the HSS-100C and the only difference is the pricing and the quantity ordered. We are disappointed this situation has come to the stage where an explanation is required."* Leon Senior of Skandia told SatFACTS, *"This matter has been blown far out of proper proportion. There is no special HSS-100C version, they are all the same. And we have to get on with our lives and sell what we have available to us, today. We might wish for an 'all singing, all dancing' IRD that does everything perfectly. I have yet to see it in my shop."*

About which Cratt had made much in his initial letter to those buyers who had reserved the AV-COMM "version" of the HSS-100C. Amongst the promised features was AV-COMM created software that would cure the NTSC (PowerVu) lip sync glitch.

If you will check page 16 in this issue, you will learn more about solving that particular problem. It is of interest to see in Mr. Yoon's May 29th letter an admission that Hyundai apparently has not solved the NTSC problem themselves (well, until they read page 16 here). He wrote, *"We have not completed the solution to resolve the NTSC to PAL conversion and we are now trying to make the receiver fully compatible with PowerVu. When we have this problem solved, we will release this software version."*

Hyundai as of early June claims to have supplied 6,000 of the HSS-100C version receivers to China. They say, "We have never received any serious quality problem reports," and, "This set is successfully receiving many programming bouquets from AsiaSat 2, PanAmSat 2 and 4, Palapa C2, ApStar 1, Thaicom 3 and Intelsat 703 without problems."

So out of these exchanges we have a clearer trail of why the "Hyundai Affair" happened. Hyundai further suggests that the quantity of HS-100C receivers ordered by AV-COMM "was small" and Cratt himself says he was told his requests were not honoured, *"because we didn't order enough units to attract a special product run at Hyundai."* Perhaps. But Garry Cratt's insistence that Hyundai provide a receiver that at the very least suited the basic Pacific requirements did at least focus attention on the plight of being down here under the shadow on the massive Asian marketplace.

True, most users could adapt to using the audio and video output jacks on the receiver to drive their monitor inputs or a separate VCR modulator (that is - the incorrect aural subcarrier remodulator was not really that important). But when a distributor does take the time to attempt to point out to a factory some small changes that would make the product more acceptable, one would hope the factory would at least have the courtesy to advise, *"No thank you, we cannot do that economically"* rather than simply shipping the product as if it had incorporated the changes. And of note - even Pacific and Skandia, ordering far more than AV-COMM had originally ordered, still did not get the obvious changes that would tailor the HSS-100C to the Pacific.

To paraphrase Leon Senior, what we have is what we have and now it is time to get on with the business at hand; selling enough receivers down here to command our own "P" version products in the future.

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OBSERVER REPORTING FORM - CONTEST ENTRY - Due July 4

- NEW programming sources seen since June 1st: _____
- Changes (signal level, transponder, programming content) in pre-existing programming sources since June 1st: _____
- OTHER (including changes in your receiving system): _____

NOTE: Please use P1 - P5 code when describing signal levels and receiver IF/RF settings.

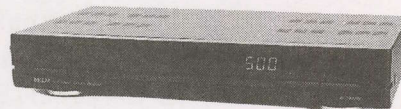
Your Name _____ Is this contest entry? _____
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Make/size dish _____ LNB _____ Receiver _____
Bonus Word Entry: _____ on page _____

May **BONUS WORD** - **Malevolent**-p. 25

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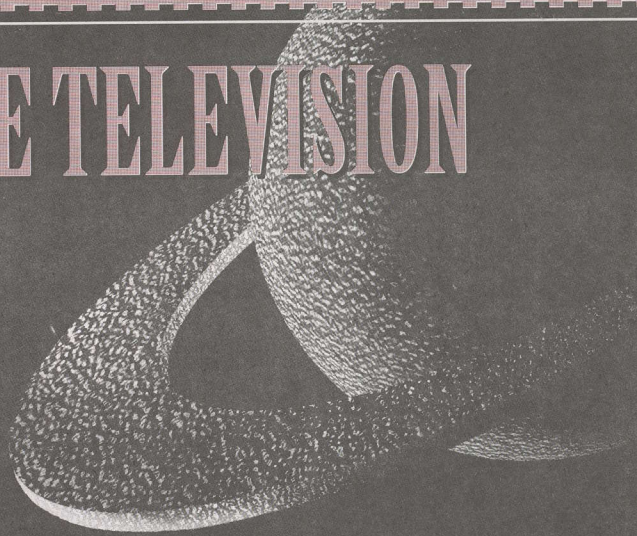
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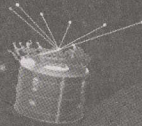


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